FOOD FROM THE COMMONWEALTH AND EMPIRE

by

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IF YOU are hungry, you will make great exertions, if necessary, to get food; if your children are hungry, you may feel an even greater urgency. If a friend is starving, you will probably exert yourself to relieve his distress. But if you hear that some millions of Indians or Chinese are in danger of death from malnutrition, the problem is so vast and so distant, that unless you have some official responsibility, you probably soon forget all about it.

Bertrand Russell in "Unpopular Essays":
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A WORLD well fed, with economic prosperity and full employment, is the only basis of world peace. In the next 25 years we would need to double food production to keep up with the growing population. Food is the greatest of all trades. Of all the people who are working in the world today, 65 per cent. are producing food. Can we produce sufficient? My own view is that . . . we can double world food production in less than 25 years.

Lord Boyd-Orr in an address to the
Council for Education in World Citizenship.

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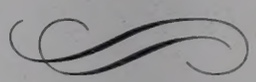


ILLUSTRATIONS IN FULL COLOUR

Part One

THE STAPLE FOODS

FOOD and drink are the first requirements for a healthy and happy world. Today they are all too short for every one to live well. Within the British Commonwealth and Empire are enormous agricultural resources ; from Polar ice to the steaming forests of the Equator every kind of climate and vegetation can be found, and almost every kind of product and foodstuff used by Man. Some countries are rich and contribute much, every one—however poor—adds something to the world's larder.

How does the Commonwealth and Empire make this mighty contribution and of what does it consist ? So far-reaching is the answer that it can best be given in three parts—and here is the first of them. It tells of the outstanding staple foods—of the great grain crops, of meat and of dairy produce ; and as the wonderful story of wheat, cattle and sheep is so closely bound up with the growth of the big Dominions, it is fitting to begin with them.

Food from the Commonwealth and Empire

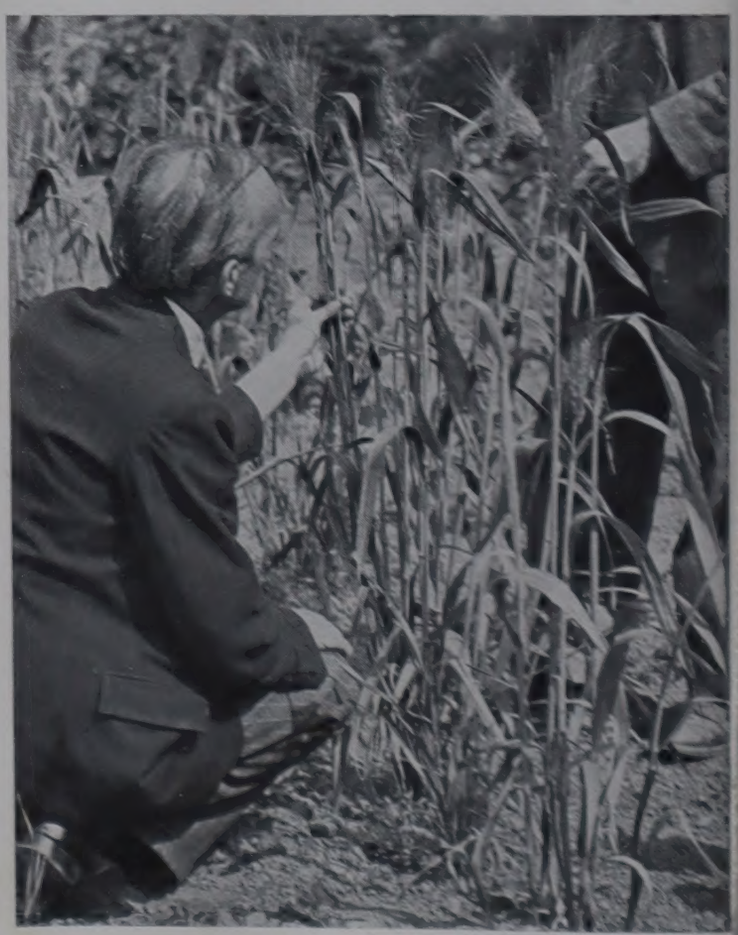
IN the earliest days of Mankind, long before history, wheat and barley were grown. Among fragments of pottery and bone dating back 5,000 years before the Birth of Christ, seed grains have been found which we can recognize. Wheat has a double honour; it was the first crop in the world and now it is the greatest.

Most of the world's wheat is eaten in the form of bread which is an essential part of the diet of the entire Western world. Some is made into a hard paste and becomes macaroni or spaghetti but, except in Italy, the amount so used is not large. Bread made of wheaten flour is very nutritious and it is now being introduced into Africa and other parts of the world where it was unknown before except to Europeans. As the peoples of these countries become more accustomed to using wheat flour, we may expect the demand for wheat to become even greater than it is already.

Wheat is ground into flour before use; in the old days this was done between millstones turned by animals or by windmills; today it is carried out by big power-driven roller mills. In this process the outer skins of the grain were rejected, giving a pure white flour. But in recent years, in order to make the utmost use of the grain, the skin is often milled with the rest. Flour made in this way produces brown bread, lighter or darker in colour according to the degree of extraction, or elimination, of the outer skins. These skins contain valuable vitamins so that brown bread is often held to be more nourishing than white. In many countries, but not generally in Britain, other coarser grains such as rye and barley are mixed with wheat and this imparts an even darker colour to the bread which, when it is made mainly of rye (as in northern parts of Europe) is called black bread.

Wheat can be cultivated almost anywhere except in the damp tropics. It thrives best in a temperate climate—the same type of climate, in fact, that is best suited to the white races. So it is not surprising that the great wheatlands today outside Europe should be those, in the main, in which Europeans have settled. But modern science has developed many different varieties of wheat which can be grown well where this was never thought possible, both in areas far north where the summer is very short and in countries like Australia where the heat is intense and the rainfall small. Such discoveries add much to the real wealth of the world, for they enable more and more territories to grow foodstuffs of which its peoples can never have too much.

When Julius Caesar came to Britain and Rome was master of all Europe, Egypt was her granary. We know nothing about America at *that* time, but we do know that fifteen hundred years later, when Columbus



This strange-looking wheat was grown from seed over 6,000 years old which was found during excavations at a tomb in the Valley of the Kings in Egypt. Each bearded head has several ears.

In some parts of Canada wheat-farmers still use horses to haul their machines (*top*). But on most prairie-farms tractors are employed, though not all are driven by the farmer's 12-year-old son as is this one (*bottom*) which is towing a giant combine harvester.

Photos · National Film Board of Canada

Combine harvester at work in a typical strip-farming field in Alberta. This machine, which r
threshes the grain simultaneously, has largely supplanted the old-fashioned method

The Wheat Pioneers Come to Canada

Starting in the tiny province of Nova Scotia, the line runs through New Brunswick over Quebec, Ontario and thence passes through the three Prairie Provinces are shaped rather like a blunt wedge with one straight edge lying on the American ...er. The railway cuts through the lower part of them, between one and two hundred from the American border and roughly parallel to it. Kicking Horse Pass, through Rocky Mountains, is well over 5,000 feet above sea level, higher than the highest train in the British Isles. Once past the Rockies the railway drops south across Fraser River to Vancouver. At Winnipeg, nearly 1,000 miles west and of October, great arms stretch upwards, one northwards through Manitoba to Churchill, a port ...e inner shore of Hudson Bay—the other transiting the central areas of Saskatchewan Alberta, with the large cities of Saskatoon and Edmonton.

The usual method of comparing railway freight systems is by ton-miles. Each ...n tons is multiplied by the number of miles that load is carried and the total of all added together gives the figure ...e year. In 1944—a peak year—...otal for Canada's two systems, ...P.R. and Canadian National ...ays, was 66 thousand million ...iles. The size of this figure ...s not only that heavy loads are ...d but that they must be carried ...me distances.

With the C.P.R. there came ...ttlers. In the Prairie Provinces ...ulk of them arrived between 1890 ...1913—men from every part of ...pe—England, Scotland, Ireland, ...ce, Germany, the Netherlands, ...dinavia, Poland, the Ukraine—...of them farmers or land workers ...dy and all eager to establish ...rms, grow more and more ...s to sell and become richer than ...they could have done in the ...ld countries. Already Canadian ...neers were building large agricul... implements, drawn by six to ...e horses, to enable them to deal ...the vast unbroken areas of land ...a good strain of seed—"Red ...—was available. The stage was ...or wheat.

In 1876, before the railway ...e, the wheat area centred around ...nipeg was about 15,000 acres. ...in Ontario and Quebec over two ...on acres were harvested, for those ...inces could move their grain by ...r. By 1901 the wheat belt that

From the prairie silos, where it is stored, Canadian wheat is taken by train to the grain ports on the Great Lakes. Here a "grab" is made in a car-load for inspection.

Photo: National Film Board of Canada

spread across Manitoba; five years later it reached across Southern Saskatchewan; and by 1916 Alberta was well covered. A few years ago these three Provinces had between them 27 million acres of wheat fields and the remainder of Canada only about one million altogether. The total acreage under wheat alone is just half the whole area of Great Britain.

Out of Canada's 12.9 million people, the Prairie Provinces have only 2½ million, including women and children. Each agricultural worker must cultivate an area much bigger than he would or could do in Britain. To do this he must work, not in small fields, but in huge virgin tracts of land and use machines much larger than those to which we are accustomed. Giant ploughs drawn by high-powered tractors, wide seed drills, and combine harvesters which reap, thresh, bind the straw and deliver the grain ready for immediate transportation enable him to develop his prairies to the best advantage.

Considerably more than three quarters of the crop is exported, Britain still being, as in the past, Canada's best customer, although many other countries also buy from her. With Britain there was a special agreement whereby during the four years from August 1946 to July 1950, Canada should supply 600 million bushels of wheat at an agreed price. Subsequently the 4-year International Wheat Agreement came into force under which Britain's purchases of Canadian wheat averaged some 120 million bushels annually.

The price of wheat naturally alters from year to year according to the amount available. The harvest varies very greatly; other crops may be grown in place of wheat, there may be unexpected outbreaks of disease, or simply the weather, by prolonged frosts or drought, may prove unfavourable. But this fluctuation in output is to some extent taken care of by the Canadian Wheat Pool which is like a vast co-operative society controlling the market. This organization has built huge elevators or silos on the prairies

At Port Arthur, on Lake Superior, wheat cascades out of an elevator spout into the hold of the grain boat in which it will travel eastwards along the Great Lakes Waterways.

Photo: National Film Board of Canada

and in the wheat centres capable of storing many million bushels, so that the surplus of a good year can be carried over and sold the next.

Fortunately wheat is easily transported by rail and steamer and can conveniently be handled by machinery which pumps it by suction, as if it were a liquid, through large pipes from the hold of a ship and discharges it in similar fashion into waiting trucks or into the storage silos. It can also, by modern methods of control, be safely and easily stored. This is another reason why wheat is of such importance in our world today and why the people of Europe are able to depend so much on countries overseas.

Oats, though less valuable than wheat in terms of money, are extensively grown in Canada, mainly as food for stock (cattle and pigs). Oats have the advantage that they will do well where wheat would not—in a damp climate—and are good on newly-broken grassland. Over the whole of Canada the acreage under oats is generally rather less than half that devoted to wheat. They are an important crop in Quebec, which now grows little wheat, and also in the smaller provinces on the Atlantic seaboard. Oats are a bulky crop and the cost of transport is high in proportion to the selling price so that it is not a good crop to export, and although Britain uses it as oatmeal, she does not require much. Altogether Canada produced about 317 million bushels in 1949-50. But since the number of her livestock has increased greatly in recent years, she needs all the oats and barley she can produce for her own meat and dairy industries; and the export of these coarse grains is not now permitted by the Dominion Board of Agriculture.

Barley is another grain which dates from prehistoric times. Its most interesting use is in the form of malt—barley steeped in water until it begins to sprout and then dried in a kiln. This is the base from which beer is brewed. Whisky also is distilled from barley. But both these require a special type and the major part of world production, including all Canadian barley, goes for stock feeding, to cattle and especially bacon pigs.

Barley will grow anywhere that wheat will and here again the Prairie Provinces, which are the heart of Canadian agriculture, lead heavily.

Australia's Wheatlands

Within the Commonwealth, Australia is the second biggest grower of grain crops. On a large scale they are a comparatively recent development, for earlier in her history Australia depended on wool for her overseas trade. Early settlement followed the narrow coastal belt of level ground and was cut off from the vast interior by the Great Dividing Range. When the new colonists first entered the wide plateaux beyond these hills, they were only seeking pastures for the great flocks which were, at that time, their main wealth. Later on it was found that these districts, although much drier than the coastal belt, were better suited to the growing of wheat. By the time the railway had crossed the Divide, large scale wheat production became a commercial proposition.

Mechanization is now general in Australian farming, locally manufactured agricultural implements being produced to a yearly value of £6,600,000. Here, on a wheat farm in Western Australia, pneumatic tyred.

24-row, 49-tine Australian-made cultivating drills are at work. They are fitted with small seed boxes and have smoothing harrows behind, whose tines are thrown clear of obstructions on the stump-jump principle.

Government of Australia

In 1950 nearly 8½ million acres were under wheat, almost half the total area under crop cultivation. New South Wales and Victoria each contributed more than 2 million acres, followed by South Australia and Western Australia—a striking change from a hundred years ago when South Australia, with its greater area of cultivated land along its seaboard, was the principal producer.

The problem of finding suitable varieties was a serious one, for the standard European types were not successful. Whereas in Canada the search was for a quick-ripening type for a short summer, in Australia the need was to find a wheat which would require less rainfall than normal and would withstand higher temperatures. At the same time it must ripen for harvest at the right time to suit the regular rainfall. In recent years "Nabawa" in New South Wales and South Australia, "Free Gallipoli" in Victoria and "Bencubbin" in Western Australia have become the favourites. Since Australia is in the southern hemisphere, her seasons are the reverse of those in Britain: Christmas falls in the summer and December is the month of harvest.

The main wheat area is the Riverina District of New South Wales, the plains between the Murray and Darling Rivers. Mixed wheat and sheep farms, running up to 1,000 or even 1,600 acres are now common. Wherever the rainfall is between 10 and 25 inches wheat can be grown in the normal way, but in many districts that have less than 10 inches of rainfall in the growing period, wheat and other crops must be cultivated by the "dry farming" method. The land is ploughed in winter (July-August) and allowed to lie fallow for six weeks—the rainy season. The fallow is then broken up with a cultivator and the surface kept loose to check evaporation. Thus the water which has fallen before the seed is planted is stored in the soil and used during the growing period (May-October). Large and successful crops are produced in Western Australia in this way. The best yields are from South Australia where the climatic conditions are most suitable although the land available is relatively small.

Cyprus is among those British Colonies which produce crops of wheat and barley. At harvest time, women work in the fields wielding the old-fashioned sickle.

Australia's total production of wheat averages 150 million bushels, though over 210 million bushels have been achieved in a good season. Of these she herself consumes only some 40 million bushels, leaving an average of 110 million to be exported. Part of this is sold as flour already milled: during 1950 the United Kingdom purchased 100,000 tons of it and about a million tons of wheat as well. Although Australia's total production is less than that of the United States or Canada, the low figure for her own requirements makes her a great exporting country in the world's wheat market. This is, of course, possible because her total population (only 7½ million people) is small and it immediately

suggests that the farmer and worker on the land must be able to cultivate much larger areas than would be the case in Europe.

This was done by the adoption of machinery in which Australia was a pioneer. The stump-jump plough, which throws the ploughshares clear of obstructions such as the stumps of felled trees, enables land to be worked without the heavy labour and cost of grubbing up the roots. The stripper, which gathers the heads of the corn and threshes them and, above all, the huge combine harvesters have revolutionized grain production. And the Australian farmer likes size; 20-furrow ploughs, harrows 24 feet wide, and harvesters that cut a swath 10 to 18 feet across, enable a couple of men to prepare, sow and harvest up to 300 acres. By such means wheat can be grown plentifully and cheaply even though the yield per acre may often be low.

As you might expect, oats and barley are also good Australian crops but since the Commonwealth is also a leading stock-raising country most of these, if not all, go to feed her own herds, either as grain and hay or as green fodder. Barley is grown mainly in South Australia on the peninsula west of Adelaide. In recent years the production of barley has slowly increased but its total acreage is still only a fraction of that devoted to wheat, oats and hay. A small amount of high quality is exported.

NEW ZEALAND, though now principally a country of meat and dairy production, grows a fair wheat crop in the Canterbury and North Otago areas of the South Island. But it is not sufficient for her own needs and she imports some 5 million bushels from Australia. This was not always so, for seventy or eighty years ago, before the full development of the Australian grain industry, it was New Zealand who exported to her. Since then, however, New Zealand has turned more and more to stock-raising and dairy farming and her wheat production has been assisted by protection; a guaranteed price is paid and each process from the grain to the loaf of bread is carried out under Government supervision at prices which are officially laid down. In the same region, oats are a fairly extensive crop, raised mainly for the benefit of horses and the racing business.

Both New Zealand and Australia are deficient in phosphates which are needed by the soil for successful crops. But the Pacific islands of Nauru and Ocean Island, which are not too far away from transport by sea, have tremendous deposits which should last for a century. The rights in these are owned by Britain, Australia and New Zealand jointly in the ratio 42 : 42 : 16 and they share the annual output in the same proportion. This supplies the requirements of both Australia and New Zealand.

India & Pakistan Need Their Own Wheat

You might not, perhaps, think that the sub-continent of India was a wheat growing area but there are districts within that immense land which, in spite of its hot climate, lie high and have a suitable rainfall at the right season. Parts of the Punjab, (divided between India and Pakistan), Sind (Pakistan), and the Uttar Union (India), —and also the lowlands of the North West Frontier province of Pakistan—between them cultivate 26 million acres and produce 11 million tons. Little of this is exported since the people of the sub-continent—more than 425 million with an annual increase estimated at 6 million—need all this and more. The ground is dug by a simple plough drawn by bullocks in the cold season, the grain being sown in September or October and harvested in April or May. The agricultural departments of the states of India are continually experimenting with seed and both India and Pakistan grow with success a cross with the Australian variety called "Federation".

If we compare the total Indian wheat crop with that grown by Canada or Australia

In the past the East African native farmer has been slow to realize the value of manuring his fields to ensure the continuance of good crops. Today he is beginning to profit by European example, as this fine crop of maize in Kenya shows.

den cobs of maize freshly harvested in Southern Rhodesia which is in the centre of Africa's "maize ..." This important cereal, known by various names in different countries, is the most widely-grown grain crop in Africa, among whose native peoples it is a staple food.

Cutting millet at Palitana in India where the various species of this highly nutritious grain supp
principal food. Mixed with wheat-flour it can be made into bread.

Photo : Government of India

farmed—and a large part of this is used for rice growing. Irrigation is carried out
ticularly in Sind, the Uttar Union and the Punjab. In some areas a crop of b
(2 to 2½ million tons) is also grown and sold for export.

At one time India exported much wheat to Britain and this was partic
valuable since it arrived at a different time from the supplies from Canada. But for
years more and more wheat flour has been used by the Indians themselves and
surplus she did export was mainly to neighbouring Eastern countries. Karachi, c
city and principal seaport of Pakistan, was the centre for this export trade in wheat
the port from which most of it was shipped. But since the war of 1939-1945, sup
of rice have been low and India and Pakistan are likely to need to import wheat
other grains over and above what they can grow. It seems
probable that, as more rice is cultivated, the wheat crop will
decrease, although the Indian Government is making great
efforts to increase production of all kinds of foodstuffs.

In the Colonial Empire, Cyprus—part of the ancient
Mediterranean cultivation—formerly produced crops of wheat
and barley for export ; today Kenya has a small surplus.

Whilst large areas of South Africa, particularly near Basuto-
land, and some regions of European settlement in Kenya, Uganda
and Tanganyika grow crops of wheat and oats, the greatest grain
crop in Africa is **Maize**. It is an ideal crop for tropical and semi-
tropical countries because it can stand heavy rainfall and enjoys
heat. The only thing which maize cannot endure is frost or even
moderately cold summer nights. Certain varieties of maize known
as "sweet corn" can be raised in Britain, if the summer is a good
one. It grows on a cob or stalk, six to ten inches long and
closely covered with large golden grains. Freshly picked, boiled

narkable result of ming the waters of Indus River in Paki- by means of the yd Barrage at kur. Parched mud- at Johi Pat (*right*) re transformed into st sheet of flourish- wheat (*below*) after functioning of the irrigation canals.

and eaten with butter or cream it is sweet and nutritious though rather starchy and is a favourite food with Americans. Another variety is used as "pop-corn." The grains are separated and dried, and when put over the fire in a shovel or a special basket, the tiny drop of moisture left inside the grain bursts quite loudly. The result is like the breakfast food known as "puffed rice" but larger and much sweeter. Both sweet corn and pop-corn are of the flat-grained, soft type of maize.

Another kind, known as "Flint Maize," is rounder, very hard and mainly composed of starch. Maize goes by many other names; in Britain its old name was Indian corn since it was first introduced by Columbus who found it grown by the natives (whom he thought were Indians) in America. Later it became well known to the Elizabethan seamen and settlers in Guiana as they depended on supplies grown by the inhabitants. Americans today call it just "corn"; in South Africa it is always known as "mealies." In Britain, maize is mainly used for feeding livestock and poultry, but in both Africa and India it is one of the principal articles of diet of the people of those countries.

Food from the Commonwealth and Emp

In South Africa "mealies" are grown mostly in the Transvaal and Orange Free State and far more on the Eastern side than on the Western. The areas of production lie around Basutoland which itself raises a large crop. They are grown not by the white farmers but extensively by every native who has any land; and under favourable conditions an acre can produce nearly 100 times as much grain, that for South Africa is only an eighth of this; in a poor season much less still.

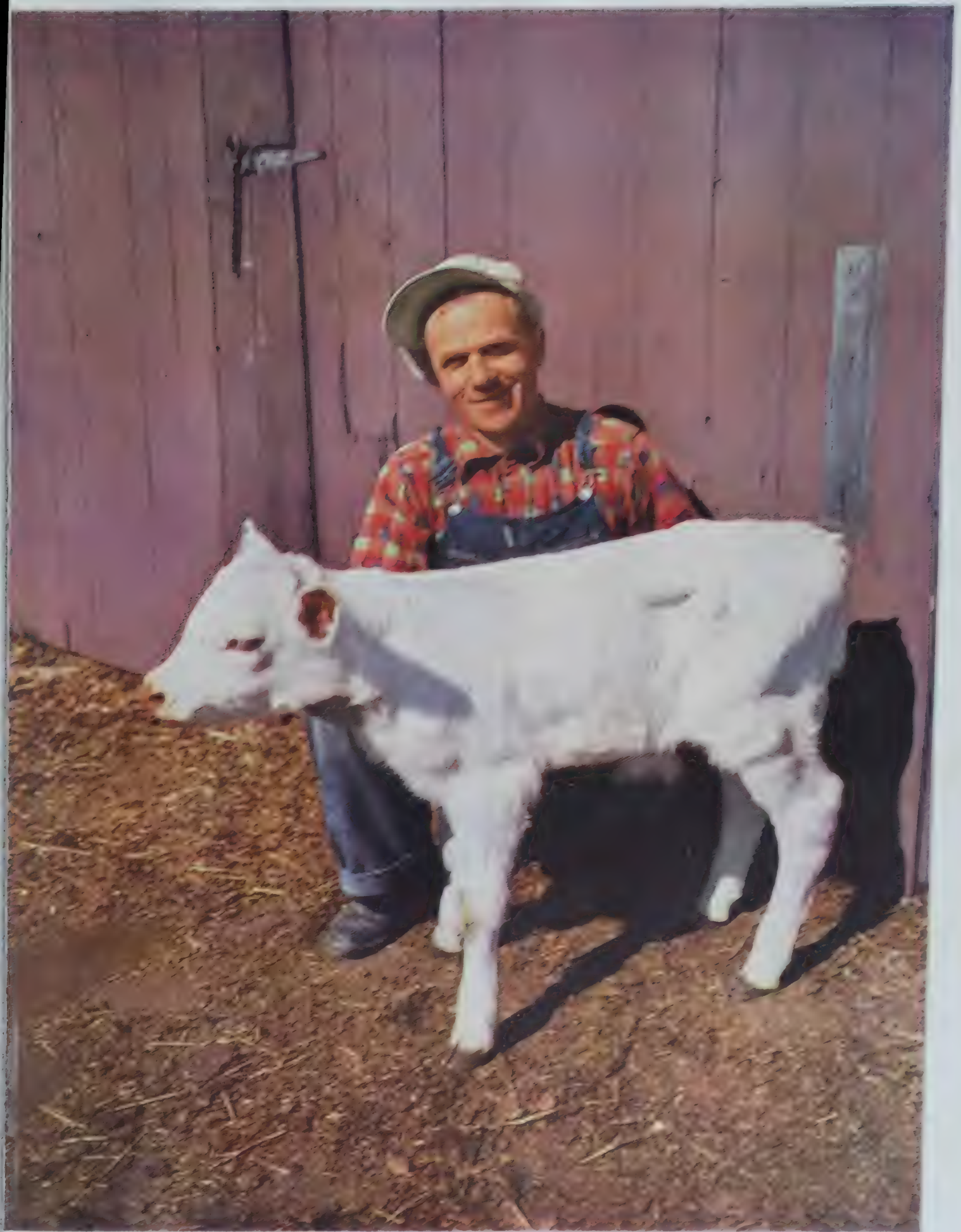
Africa's "maize belt" runs right up the East and centre of the continent. Southern and Northern Rhodesia, Kenya, Uganda and Tanganyika, largest producers except South Africa, all grow big crops but there is none, or very little, available for export. Even in parts of West Africa some maize is grown—in Sierra Leone and Nigeria. There, where families live on as little as 3 acres, the best land is reserved for

In South Africa and wherever there are large herds of cattle, much of the maize grown (particularly by European farmers) is intended for their use and the crop is harvested as all, being cut down and fed to the animals as "green fodder" or

even be turned field as it stan to the native maize is one staple articles and from it his bread and times prepares wine.

Maize w native plant of we have seen was introduce America an probably first in Mexico. B is another grai the **Millet** (or s —botanically which *is* to Africa.

Feeding sorghum bags after it has be at Peak Downs Central Queensl 1949 harvest wa fruits of the join the Queensland ment and the Br seas Food Corp grow sorghum c scale by mode anized met



EEF is among Canada's major contributions to world food supplies; there are more than
0 million cattle in the Dominion. Government experts carry out research into breeding at the
Experimental Farm at Ottawa, where this sturdy bull calf was born.

Photo: Malak, Ottawa

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immense value to the Africans because it will stand prolonged ought and therefore can be grown where there is not sufficient rainfall for maize. There are many kinds of millet, some ith tiny seeds and some with large. In South Africa it is nerally known as Kafir Corn. As early as 1600 an account this grain was written in England :—

> "This Millet is a very excellent grain, hath a good taste and is wholesome to eat, it is sweet in your mouth but gnasheth in your teeth, which cometh of the stone wherewith they grind it."

That was recorded by an early traveller to the land en known as Guinea, the present-day Gold Coast. He goes to say that the inhabitants used the straw to cover their ouses.

INDIA likewise grows a large harvest of millet (over 9½ million tons) and has several improved varieties such as Jowar" and "Bagri." It is grown extensively throughout ost of the country in the hot areas when rainfall is insufficient r other crops, and in the Deccan and in Madras state is the staple food. Although it not an important export to Europe, millet is nevertheless one of the most useful kinds grain to the countries where it is grown since it supplies a necessary part of the local diet areas where other crops would not grow so satisfactorily. Only in the Anglo-Egyptian udan is the production of millet so great that it can be exported elsewhere; large uantities of "Dura," the North African type, are carried by rail into Egypt and some thence exported to Europe.

Both maize and millet are mainly grown by native peasants generally using rimitive and arduous methods. Their individual pieces of land are very small and the ork is done by hand. In Africa, the ground is prepared with a hoe, often by women, r among many of the native African tribes the growing of crops—tilling the soil, eeding and harvesting the grain—is part of the women's work as well as the subsequent reparation for cooking and eating. In many territories, particularly West Africa, rge tracts of country are unoccupied and for many generations the African peasant as been in the habit of clearing a patch for cultivation by burning the grass, bushes nd trees, and then growing all he can on the little part so cleared. But after two or three ears he has exhausted the fertility of his field; he does not manure it and he has not he means to cultivate it properly. Accordingly, when the land will produce no more e moves on and clears another patch, allowing the first to run wild into jungle again. ter perhaps ten years the original patch is restored and is ready to be burned off once ore. But this is very wasteful and is only possible where there are few people living wide areas of jungle. It would be impossible in India where there is no spare fertile nd to be left uncultivated for years.

Scientific Help for the Native Farmer

So if the production of maize and millet and other native crops, which are badly eeded, is to be increased, the peasant must be shown how to cultivate and manure his elds and how to grow different crops in different years so that the same field can be ept in production, as it is in Britain, and new land cleared for turning into more and

The Indian peasant farmer works his few acres with only the most slender resources. His plough is a simple wooden affair ; his draught animals are bullocks, to feed which he must set aside land that might well be given to increasing his crop of wheat, rice or millet.

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paid to raising va
which will yield
grain from the same amount of land. Experiments are also carried out from tim
time with large scale planting and reaping of millet and other crops, using big ar
land, sometimes freshly recovered from the bush, and fully mechanized meth
tractors, big ploughs and harrows and automatic harvesters. Such machines are n
Africa, but their employment even in tropical countries is steadily increasing
during the last few years large numbers of Africans have been trained to work

As the individual farmer or worker could never afford to buy such equipment
it be had the land, schemes of this kind are generally organized and paid f
Governments. In 1949, for example, Britain's Colonial Office, through its Co
Research Committee, spent nearly £2,000 in investigating suitable large-scale
mills to enable millet grain to be ground into flour in big quantities. Before the w
supply can be increased, every detail must be thought out and its possibilities exa

So far we have been thinking about maize mainly in India and Africa, bu
grown very extensively in Canada and Australia too, by the same large-scale m
that we have seen used for wheat and barley. The difference is that in these cou
maize is almost entirely employed for stock feeding ; much of the beef and pork
is sent to us from these two Dominions is fattened upon the maize which they pr
A small part, it is true, does come to us in quite a different form. Maize of the h

ade can be separated from its golden skin and the white inside ground
an extremely fine powder, like flour, which is highly nutritious.
his product, which we know as cornflour, is used for puddings and
anchanges.

Yet another grain crop is **Rye**. This is widely grown on the
older and poorer soils of Northern Europe, for it is a hardy plant and
so free from diseases which attack wheat. There it is made into cheap
read (black bread, since it is dark), either alone or mixed with wheat.

But within the Commonwealth and Empire, Canada is the only
country which produces a large crop. It is remarkable that in recent
ears the area cultivated and the amount grown have nearly doubled
nd Canada now exports much more than she used to; today Italy,
rance and Belgium are her chief customers. Britain has never
equired much more rye than she grows herself, but since the war of
939-45 many other countries in Europe are very short of it and must
ry from overseas. Small quantities of rye are also grown in South
frica and Australia. Rye straw, being hard and stiff, is used for padding.

There could hardly be a greater contrast to the spreading fields of golden
rain than the paddy-fields of the East. Yet **Rice** is a plant akin to wheat though
spends most of its life growing in water. China, India and South-East Asia generally

n the broad, well-irrigated Krian paddy area of Perak, a Malay woman takes nursery seedlings for transplanting in the field. As part of a determined effort to expand rice production in the Federation, the Government grants loans to poor growers and guarantees prices.

Burrinjuck Dam on the Murrumbidgee River in New South Wales provides the water whic ricefields as well as orchards, vines and other crops. The Australians use modern mechanic to cultivate and harvest their rice.

Photo : Gove

produce most of the world's rice. The seeds are sown very thickly and the yo are then transplanted by hand and set in rows in the fields in which they are but before or just after this transplanting these fields are flooded to a depth of a fe The rice remains like this until harvest time but whilst they are still grow water the plants must be kept free from weeds. So the peasants who cultiva fields, many of them women, do most of their work standing in mud and wate intense heat which rice needs to grow properly.

You will see, therefore, that rice flourishes in all countries that have a hig temperature and either heavy tropical rains or big rivers that can be used to fields in the proper season. In many regions where rice is used for food, the l hilly so retain the water naturally and here immense artificial swamps have by terracing and levelling sections of the hillsides, a task that has taken the har many generations.

It is difficult for us to realize the tremendous importance of rice in before the war of 1939-45 about 90 million tons of it were grown. But its true s to that many Asiatic peoples eat very little else and that there is nothing whic its place. Consequently the lives of hundreds of millions of people depend on and if there is a bad harvest and it is short, millions will go underfed and starve. The results of a rice famine are probably more far-reaching than thos any other shortage, but the causes of famine are often wars and trouble of concerned which prevent the proper cultivation year by year of the crop on all depend.

During the war of 1939-45 most of the great rice-growing areas w battlefields or occupied by the Japanese. We do not know exactly how much during those years but we do know that the supply was very short and that

...at a Rice Famine Means in the East

...Malaya were suffering severely from insufficient food. Since it was impossible to ... from the lands held by the Japanese, output had fallen to a bare minimum and ... were no stocks in Burma, Indo-China and Siam, the principal Eastern countries ... normally had a large surplus for export. To make matters worse, even after the ... of the Japanese both Burma and Indo-China were afflicted with serious political ...es and civil war which hindered the resumption of their former exports. Thus in ... like Hong Kong, Singapore and some of the Malay States, which grew very little ...elves and depended entirely on imports of rice from outside, it was difficult to ... sufficient, and strict rationing was, and continued after the war to be enforced ...but half a pound daily.

...T the situation rapidly improved and by 1950 the supply of rice, while yet far ... beneath the need, was increasing. Thus while before the war the principal growing ... ries exported over 5 million tons, in 1945 this was down to less than one ninth. By 1950 ...onnage had risen again to over 3 million or considerably more than half the pre-...gure. But to have only half the food supply to which you are accustomed is a very ...us matter. It explains why, during and after the war, hardly any rice came to ...n so that instead of rice pudding appearing only too often on your dinner tables, ...s something of a rarity.

The outstanding rice countries of the Commonwealth and Empire are India, ...tan, Malaya and Ceylon. Vast areas of India around the deltas of the great rivers, ...tally on the eastern side on the Bengal coast, are under cultivation. In fact the rice ...tretches practically all round the coastal areas of India. The yield is low and although ...er best recent year she grew over 30 million tons, all this and more is ...umed by her own people. In Malaya, although some of the States into which the ...try is divided grew enough rice to export, others were given over so much to ...r and tin that little food production took place. Determined efforts, therefore, are now being made by the Government to improve the irrigation of existing ricefields, to restore those that were allowed to fall into disuse during the war and to develop new areas. Ceylon, who needs much for herself and for the big Indian population employed on the plantations, suffered from a long and severe drought in 1945-46 which reduced the rice crop to one-half; but since then the amount harvested has substantially increased.

Wherever Indians are employed, supplies of rice must be available and in consequence it is grown for local consumption in East Africa, particularly in Tanganyika who can export to her neighbours. Rice is also raised on the low-lying areas of Sierra Leone and Nigeria, in the deltas of the many rivers, the biggest of which is the Niger. A very interesting experiment is to be made in The Gambia. Near Bathurst is an enormous swamp, 30,000 acres in extent, at the mouth of the Gambia river. This was useless, until in 1949 work was begun to reclaim and clear it and make it available for growing crops of which rice will be one of the largest.

Other parts of the Commonwealth and Empire

Leading Commonwealth exporter of ... New Zealand. Here a veterinary inspe... the Dominion's cold stores and the ... unloaded in London from the refrigerat...

the Overseas Meat Trade Began

to create a lake from which the water is led by canals over a wide area ...ns are planned and construction has already begun. From a few sheep ...reviously occupied this district, the number of people living there has ...15,000. Unlike the peasants in the East, the Australians use mechanical ...vate and harvest the crop. As a result they grow more than double their ...ants and can help to supply other countries.

...nificance of the success of this Australian project is that it has shown ...crops like rice (and sugar also), the satisfactory growing of which by ...le-scale methods was formerly thought to be impossible, can in fact be ...d provided the climate is suitable, as in Australia, and water can be supplied. ...ment, which is still young, may very well change the future of great areas ...w little used.

...HOUT the ages meat has been one of Man's principal foods. But the amount ...which the average person eats today is much less than in the past. When we ...banquets in olden times, we are aghast at the quantities of meats of all ...e set on the table. Of course, such supplies of choice meats were only for ...people were lucky if they had any at all occasionally. Today, in Britain at ...everyone eats meat regularly so that the amount required is very large ...er, the United Kingdom has for long been the leading importer of meat

...years now, strict rationing has reduced British imports of meat to a figure ...ho ever seemed possible. Before the war of 1939–45 we imported 11½ million ...ght of beef, 6¼ million hundredweight of mutton, over a million hundred-...ght and 7 million hundredweight of bacon and ham. All this of course was ...e what we produced ourselves. From Commonwealth countries these ... mainly ...a. New ...Australia. ...ok back ...-quarters ...we find a ... Britain ... import ...se in the ...le which ...the Atlantic ... holds ... that ...the refer- ...it has then ...of send- ... distance ...which goes ...herefore, ...op pro- ...nted, the ... was not ...re was no

In Australia's biggest meat cannery at Lakes Creek, Rockhampton, in Queensland, beef from the freezers is handled by the boners. Most of the Commonwealth's export of tinned meat is sent to Britain

Photo: Government of Australia

encouragement for countries like Australia and New Zealand to produce mo
than they required for their own use. But the discovery that meat could be k
long periods frozen and the invention of refrigerating machinery to enabl
remain frozen whilst being transported altered the whole perspective of ca
sheep farming and made it possible for Canada, Australia and New Zealand to
their pastoral industries on a vast scale.

REFRIGERATION came into general use for imported meat about 70 years ag
had freezing injured both the texture and the flavour and frozen meat was r
as inferior. In the early 1930's it was found that meat could be satisfactorily tran
even from Australia, in conditions of less intense cold. Meat preserved in th
known as chilled meat, retained its original flavour and quality better and wa
popular in Britain. Consequently chilled meat now exceeds frozen meat in imp
for export. The invention of canning provided a new branch of the meat trad
enabled the individual household (or the traveller) to have its own little supply,
frozen meat must be kept frozen in big refrigerators if it is to last. Moreove
kinds of meat, like fish, are more attractive cooked and canned than in the pre

Wartime conditions gave tremendous impetus to the canned meat trade.
form of packing is most suited to the abnormal requirements which then ari
considerable movement of men is possible only if food can be had in an easily trans
and easily usable form. During wartime many millions were moved about, la
sea, and whole armies were kept (as in the North African campaign), in areas wh
depended entirely upon tinned and preserved food. Even after the war the
relief to countries which could no longer provide for themselves kept up the
for canned products because these were so conveniently transported and dis
Thus the world's total export trade in canned meat during the war in 1943 was o
that of 1938 before the war; and in 1946 it was over four times though since
has declined.

But meat is only one side of the cattle industry. Almost as valuable as
the dairy products, milk, butter and cheese. It is a mark of the three great cou
the Commonwealth—Canada, Australia and New Zealand—from which Britain
the bulk of her supplies that in all three of them huge dairy industries, with v
exports, go side by side with the production of meat. This is not so in Argent
whom we normally buy the majority of our requirements of beef. This country s
to the rearing of beef cattle, on the spacious grass plains of South America, on a
system that could not be applied to dairy farming.

Rise and Fall in the Pig Populatio

Dairy farming, and also the rearing of cattle and pigs, depend much
supply of grain, hay and other feedstuffs, so you will appreciate that it is not by
that the big crop-producing countries are also the big stock-rearing countries
has over 60 million cattle, 3 million sheep and between 5 and 6 million pigs.
and Ontario, provinces which specialise in mixed farming, lead in dairy pro
Prairie Provinces ranking second; but the Prairie Provinces are the principal p
of beef cattle. In the days before settlement these provinces were grasslands
vast herds of buffalo. With the coming of the white man the buffalo were dest
enough of the grassland remains to pasture enormous herds of beef cattle. In
most westerly of the Prairies, cattle range freely over wide areas, being only occ

Pig rearing in the Commonwealth and Empire —bacon hogs at an Ontario farm (above) and feeding time at the Samaru piggery in Nigeria (left), one of several run by the Government.

Two photos: National Film Board of Canada

rounded up for branding or sale.

Many of the lands so given up to ranch cattle are poor pasture since they are not sufficiently fertile to be worth cultivating for crops. This is satisfactory for rearing and keeping cattle but is not good enough to produce fat animals for the meat trade. Hence before slaughter they are driven down to the corn and maize lands where they

ised for the market. While the slaughtering and meat packing trades in Canada so extensive as in America, they are very large and represent a major industry. A good example of the effect of the war is seen in the numbers of pigs kept by countries. The pig is not particular as to its food but to make good bacon of the d required by the trade, special foodstuffs and above all grain are needed. Before Britain had a huge pig population, more in fact than Denmark. But with the shortage of transport it was impossible to import feeding stuffs which are it was easier to import the finished article which took up so much less shipping Thus in 1937 the United Kingdom had 4¼ million pigs, in 1947 just over 1¼ But Canada, which had only 4 million in 1937, increased hers to over 8 million They have since declined to about 5½ million but even so she has today nearly mes as many as Britain. Most of the bacon Britain ate before the war was Danish

...scientific business. Most flocks number about 1,000 animals, the most popular breeds being the

Canada Doubles her Dried Milk Output

During the war supplies from this source stopped and Canada sent most of the bacon we ate. After the war she continued to supply us although Britain's shortage of dollars made transactions difficult.

Canada is the foremost producer of milk, butter and cheese within the Commonwealth and Empire and again her production has expanded since before the war to meet the increased demands of other countries. Milk in its fluid state, of course, cannot be kept for any time or sent long distances. But churned into butter, or manufactured as cheese, its nutritive value is retained and transport by sea is easy except through the tropics, when refrigerated ships must be used. In common with most countries, Canada has increased the amount of milk she drinks though not to the extent that Britain has. But she has also doubled her output of dried milk and milk products, which can be readily exported. One form in which Canadians consume more milk than we do is in ice-cream. The manufacture of this leaped in the years 1949-50 when Canada, in spite of her much smaller population, ate twenty-two times as much as did Britain before the war.

Cream receivers at a dairy farm near Hamilton, New Zealand, checking and weighing cream separated from milk before going to the butter factory. $4\frac{3}{4}$ million cwt. of dairy produce are sent overseas each year.

Photo: Government of New Zealand

Australia is, traditionally, the land of sheep—about 108 million of them. Before the days of refrigeration they were kept only for their wool and thousands were slaughtered only to be boiled down for tallow, since they could be put to no other profitable use. The frozen meat trade altered this, though even today, since the pastures of Australia are better for wool than mutton, shearing is more important than slaughtering. But in New Zealand the reverse is the case. With only about one-third of Australia's sheep population, this Dominion's exports of mutton are between four to five times as great. As you might expect, both countries eat more mutton per head than any in the world, the average for an Australian being 72 lbs. per year, for a New Zealander a little less. Britain's average is between 24 and 25 lbs. That we can have as much as this is mainly due to the supplies we receive from New Zealand. An interesting experiment during the war was the export from Australia of dehydrated mutton—that is, meat from which all the water had been extracted and which therefore occupied very little shipping space. Considerable amounts were sent overseas in this way but except in times of emergency it is not likely to be popular. The same process is also applied to vegetables.

Australia, and to a smaller extent New Zealand, have big herds of beef cattle. Queensland with 6 million head is the cattle country—the wide pastures of the Darling Downs where the herds roam loose over ranches the size of an English county in the bare and hot North. There are rivers—though in the dry season they may shrink to a few waterholes. The cattle are tended on horseback often by the blackfellows (the

aborigines) who are good herdsmen. They are rounded up and driven, s hundreds of miles over the stock routes, to the slaughtering and refrigeratin on the coast from which the canned or frozen meat can be exported by sea. journey "on the hoof" with uncertain feed and water is bad for the cowhi animals and reduces their value as meat by the time they reach the slaughtery quality is of less importance in the canning trade which has now become one of leading industries.

In dairy farming both New South Wales and Victoria run Queensl The three States between them have over 4 million dairy cattle and Austral has for long been exported to Britain (in 1950, 40,000 tons were sent); Austr to have the largest butter factory in the world. Cheese is also made and expor in far less quantities than by either Canada or New Zealand.

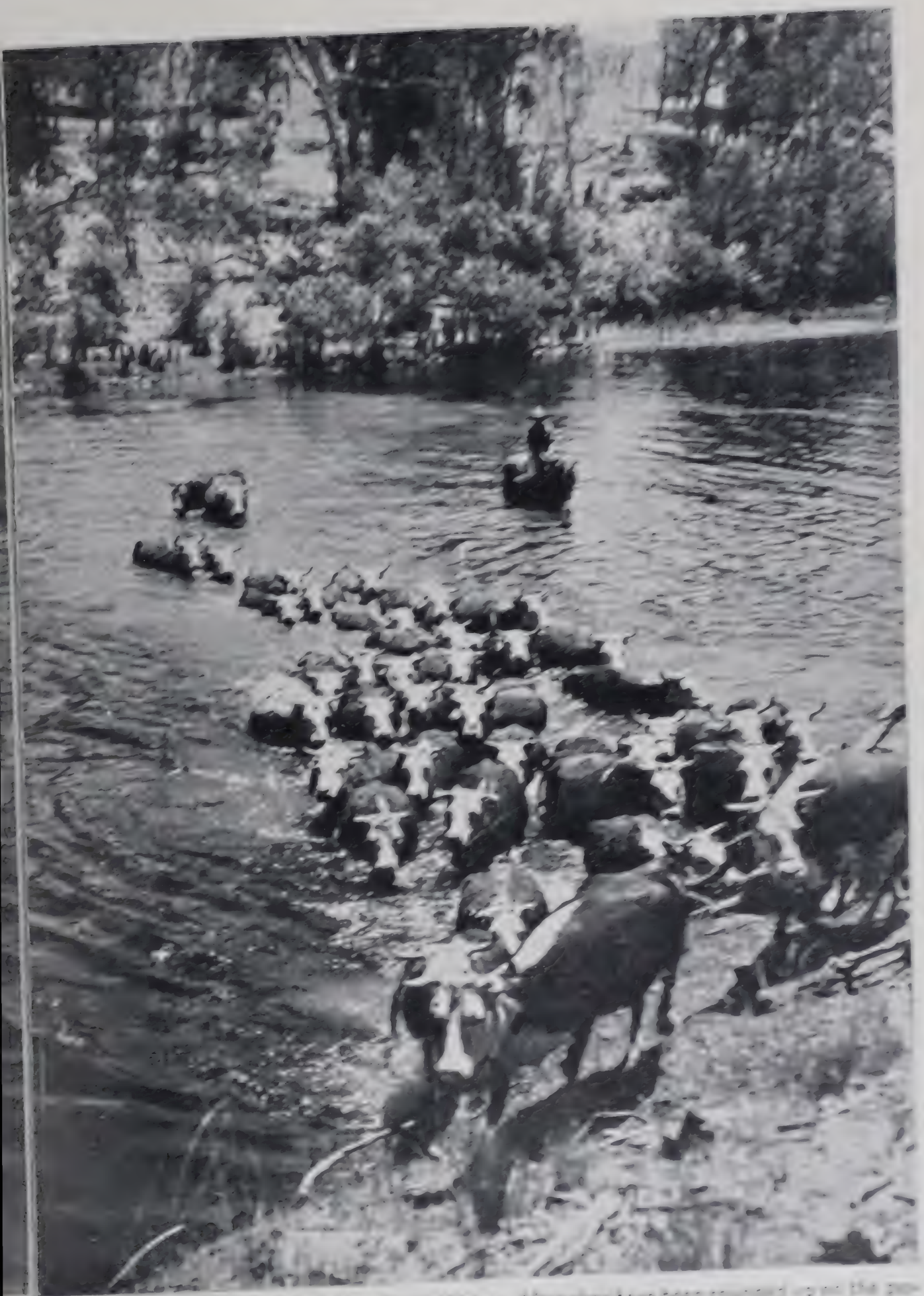
New Zealand Leads in Dairy Farm

New Zealand can fairly claim to be the greatest dairy country in t Favourable climate, good pastures and plenty of water make for high p but the New Zealander has used his advantages to the full both by maintai of first quality and by specializing in butter and cheese-making so as to com quality with high output. During the war Britain relied principally upon he supplies since Denmark and other European countries were closed to us and we to do so. In planning her farming industry New Zealand always had in mind t was to be her best customer and she set out, therefore, to produce meat, butter of the type and quality most suited to British tastes and which it was certa should always need from her.

But you must not think that all New Zealand's foodstuffs come to Bri Australia and New Zealand send large quantities of their canned meat to India, H and the many islands of the Pacific. Both countries trade extensively wit supplying cereals, butter and meat. Among the principal imports which receives from India in return are the jute sacks in which her wheat and flour

So far we have looked at the three foremost meat and dairy produce countries but cattle are almost universally raised and sheep are only a little spread. The breed of cows varies considerably from the far northern areas to of Africa or the islands of the Pacific, but there are few places where there is be milked. Within the Commonwealth and Empire, India and Africa claim attc

INDIA has a vast, unnumbered population of cattle which is estimated at all those in the world. But since the Hindu religion regards the cow as s cannot be killed nor can beef be eaten. Moreover, in the countryside—and of her population live by agriculture—the bullock or water buffalo is working animal, hauling loads, ploughing and drawing water from As a result, the number of cattle is far larger than can profitably be supporte whose productivity is low and where the very fodder for the working an valuable labour and water to grow. The cattle themselves—of the Zebu t small hump—are of poor quality and underfed, so that their yield of milk is only contribution which the cattle of India make to world trade is in hides of which India is a great exporter. But as you have seen, her huge stock o little to the true wealth of the country and do not make their possible cont its supply of food. Sheep, on the other hand, are widespread throughout In



g cattle on Rosemeath Station in New South Wales. After they have been rounded up on the pas-
Australian herds sometimes have to be driven hundreds of miles over the rough journey to the coast.

Photo: Department of Information

Shovelling damp *Antrycide* into the tray on which it will be taken to the drying oven. The discovery of this synthetic drug may prove to be of considerable help in the fight against the Tsetse fly.

estimated to total 50 million. But here again number is no index to quality, although their meat and wool are invaluable to the peasants.

In Africa a distinction must be made between the Union of South Africa and the tropical colonial territories. In the former, farming is organized by Europeans who have been in occupation of the land for a long time. Accordingly they rear stock by modern methods and have paid close attention to improving the breeds by crossing English strains with the native Afrikander cattle. Nevertheless, although her cattle and sheep populations are high the Union does not produce much more than is required for her own needs since she has never attempted to make either meat or dairy produce a prominent export industry.

Among the natives, cattle are regarded as a sign of wealth ; a man's worth is judged by the number of cattle he owns and at marriage and on other ceremonial occasions, he may have to pay so many head of catttle. Consequently he tends to keep far more cattle than he should, irrespective of their condition and whether or not they give any return. Merely to possess them is his idea of riches. There is a real problem in that the grass lands—as in the adjoining native territories of Basutoland and Bechuanaland—are seriously over-grazed through being made to carry more cattle than they can support. Over-grazing is one of the causes of soil erosion so that the results are cumulative—as the lands are exhausted they become less and less able to provide fodder and the condition of the animals becomes worse.

IN the tropical colonial territories of East and West Africa, another and even more serious trouble arises from the Tsetse fly. This fly, which sucks blood, carries the germ of " sleeping sickness " (*Trypanosomiasis*) and though the species which attack men and beasts are different, the effects of the disease are equally grave, causing illness, inability to work and death. The disease can be carried rapidly from one infected person or animal to another ; not only cattle but wild animals, even birds and reptiles, indeed almost anything which attracts the fly to suck its blood can harbour the disease. Apart from its ravages upon the natives, the disease borne by Tsetse fly has made the economic keeping of cattle almost impossible over vast areas of tropical Africa. This means, in addition, that the crops in these territories lack the natural manure which cattle supply.

To counter this menace, enormous efforts have been made to check the disease and the only way so far has been to destroy the fly which carries it. Two things make this possible—that the fly breeds in the shadow of undergrowth by rivers, marshes and wet places, and that it cannot travel more than a mile. Hence if an area can be cleaned of undergrowth along all its streams and the fly once be eradicated, it can be protected by clearing a safety belt a mile wide all round it. This, of course, means that

every road or stream entering the area must be cleared for a mile on either side before the protected region is reached. If this is done—and although it takes a tremendous amount of work, it *has* been done extensively in recent years—the protected area is safe for men and beasts and progress in farming can be made.

The biggest experiment of the kind made so far is in what is known as the Anchau Corridor in Northern Nigeria. Here the people lived in scattered clearings surrounded by bush over an expanse too wide to be cleared of Tsetse fly. About one-third of the inhabitants suffered from sleeping sickness. First they were persuaded to live together in villages instead of in scattered holdings. Then another tract of country roughly 70 miles long by 10 miles wide was cleared and protected as described. The old town of Anchau, which was both overcrowded and insanitary, was cleaned up and remodelled on modern hygienic lines, new villages were built, and the people from a wide area were moved into these 712 Tsetse-free square miles. The experiment is a new one but it appears to be successful and is typical of what is being done in West Africa, although the Eastern side presents different problems.

A native compound in the slums of Anchau, in Nigeria, before the town was cleaned up in an effort to stamp out disease carried by the Tsetse fly (see *text*). The 600 inhabitants were moved into clean, well-planned compounds in a new town—Takalafiya (*right*).

Another step forward was the opening in Nigeria, in 1951, of the West African Institute for Trypanosomiasis Research which will undertake further investigations into all aspects of human and animal *trypanosomiasis* including study of the insect carriers and experiments with the trypanocidal drugs.

The fight to conquer disease in Africa is of the highest importance.

A poultry farm in New Zealand, where egg production makes about 18 dozen available to each of the inhabitants every year. As in other countries, the eggs are graded and stamped for marketing.

Photo : Government of New Zealand

It is a vast country. Niger alone is more than seven time the size of England, but ov one-third of it has been usel for cattle. It has been a po country because of the immen obstacles which Nature has p in the way of Man. If only the handicaps can be overcom Africa may yet be able to co tribute on an immense scale the true wealth of the worl This, as you will realize, ca not be done quickly but a one of the many attempts ma to improve natural conditio in Africa may prove to be first importance.

It is hard to imagine English farm without its ar of hens in the farmyard; b perhaps it is even more diffic to realize that much the sa chickens and eggs are to found in every farm through the world. The great farming countries, of course, produce eggs of high grade by scient methods and in vast quantities. The problem of preserving them or sending them l distances, particularly acute during wartime, led to a big development of egg proces in the form of egg powder or dried eggs, in both Canada and Australia, to replace huge supplies formerly exported by China. Britain alone imports well over a mill hundredweight annually of these products. This is a formidable figure but it wo probably appear quite trifling if we were able to know the number of eggs produ in Africa, India or the countries of the East. In general chickens and ducks are rea in small quantities by everybody who can do so for their own use.

An exception was the scheme launched in The Gambia in West Africa Britain's Colonial Development Corporation in 1949. Here the aim was to cr a large-scale industry which would produce some 20 million eggs and a mill pounds of dressed poultry a year. 10,000 acres of land were cleared to grow feeding stuffs upon which the success of the project depended, but after two seas experience this was found to be an impossibility; fowl typhoid seriously depl the breeding and laying stocks, and drastic modification of the whole sch became essential.

GROUNDNUTS, rich in edible oil, are the principal food of millions of people in tropical countries. India is one of the largest growers, and enormous quantities are produced in Britain's West African territories. Here are the nuts on sale at a Gold Coast market.

Photo: Captain Julius F. Friend.

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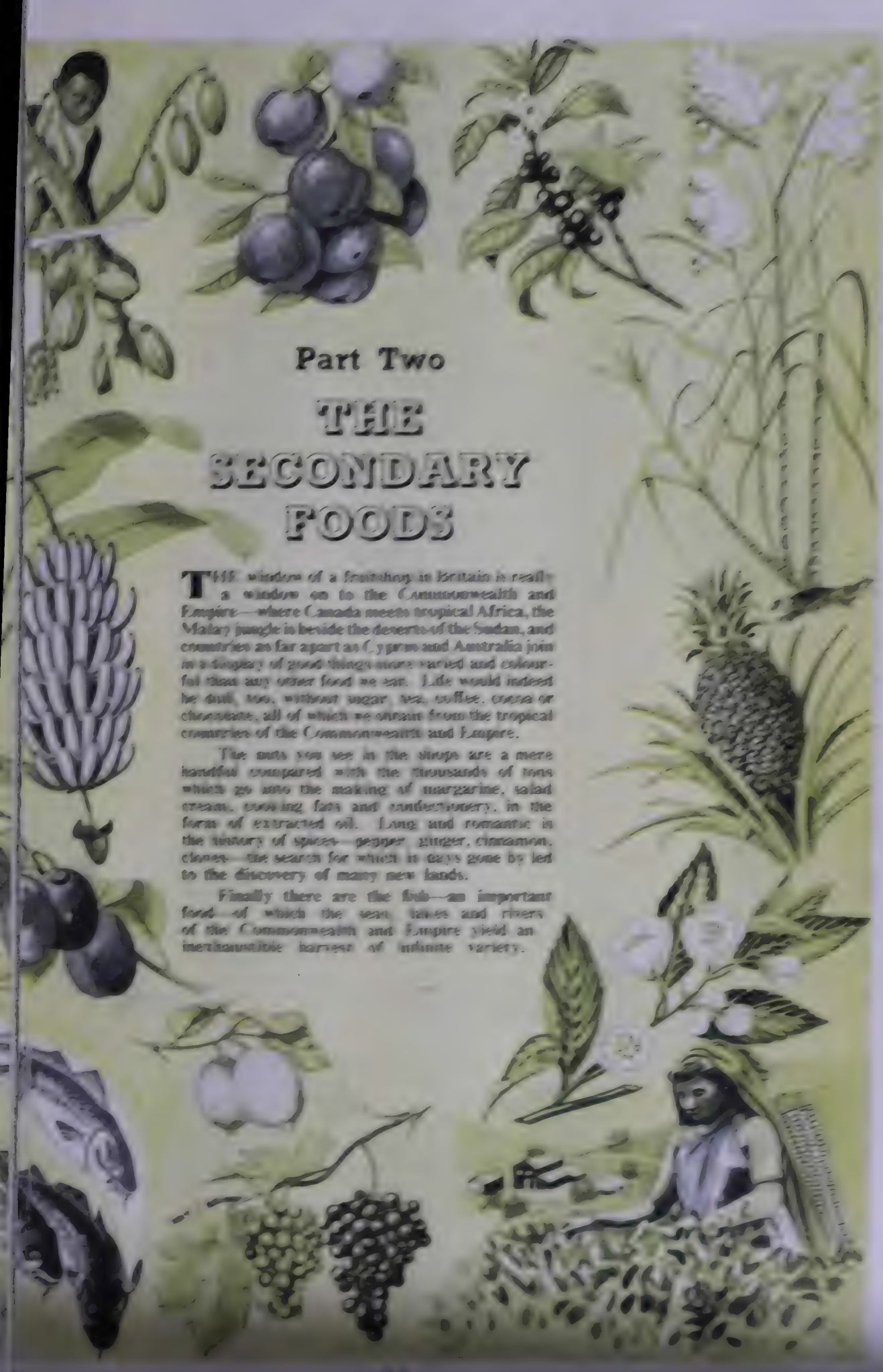


Part Two

THE SECONDARY FOODS

THE window of a fruitshop in Britain is really a window on to the Commonwealth and Empire—where Canada meets tropical Africa, the Malay jungle is beside the deserts of the Sudan, and countries as far apart as Cyprus and Australia join in a display of good things more varied and colourful than any other food we can. Life would indeed be dull, too, without sugar, tea, coffee, cocoa or chocolate, all of which we obtain from the tropical countries of the Commonwealth and Empire.

The nuts you see in the shops are a mere handful compared with the thousands of tons which go into the making of margarine, salad cream, cooking fats and confectionery, in the form of extracted oil. Long and romantic is the history of spices—pepper, ginger, cinnamon, cloves—the search for which in days gone by led to the discovery of many new lands.

Finally there are the fish—an important food—of which the seas, lakes and rivers of the Commonwealth and Empire yield an inexhaustible harvest of infinite variety.

Food from the Commonwealth and Em

ALTHOUGH Fruit has furnished a necessary part of Mankind's food since earliest times, it is only recently that we have been able to enjoy the fruits of lands other than our own. Tropical fruits in particular, with their spicy flavour and sweetness, had to wait for the age of quick steam transport, refrigeration and, above all, the modern method of preserving by canning, before they could be enjoyed by everyone, rich and poor.

Soft fruits, which include not only raspberries, strawberries and the like, but apples, pears, peaches, and plums, grow best in the temperate zone and are found throughout Europe, Canada and the United States. Citrus fruits, the orange, lemon, grapefruit and lime, require a warmer semi-tropical to tropical climate; they grow in the northern Mediterranean region but also in even lower latitudes. In lower climates still the banana and the pineapple flourish. Grapes and figs are a Mediterranean crop, though they have found their way to other continents. Dates are a product of the desert areas.

Within the Commonwealth and Empire, Canada and Australia are the chief producers of soft fruits. But so extraordinary is the range of climate in the latter country of Australia that whilst one part grows the familiar fruits of the North, another is producing equally well oranges and lemons, whilst yet another bears bananas, pineapples and even stranger tropical fruit which seem out of place in a country farmed by white men. Indeed, Australia can grow almost everything.

Western Ontario and the outer states of Canada—Nova Scotia, New Brunswick and Quebec on the Atlantic face, and British Columbia on the Pacific—bear a tremendous crop of soft fruit. How huge that is can be judged from recent average figures of production—apples, 291,000 tons, pears, 17,000 tons, plums, 18,000 tons, peaches 7,000 tons—the last a rapidly increasing crop. Comparable figures for Australia are 100,000 tons of apples, 84,000 tons of pears (mainly from Victoria), 20,000 tons of plums and 48,000 tons of peaches. In Britain, double this number of apples is grown, three times as many plums (though the yields vary a great deal from year to year) but only a few and for commercial purposes no peaches. Both New Zealand and the Union of South Africa grow soft fruit crops, smaller in quantity but high in quality. Both have a shorter sea voyage than those from South Africa appears regularly on the London

BEFORE the war, the United Kingdom ate on an average 24 lbs. of apples per head yearly, and today the amount is about the same, though we now rely on our own harvest. Part of our crop is a special apple for cider-making. We used to take the whole export crop from the two big exporting Dominions, though this was only a small part of what they themselves consumed as fresh fruit. Australia also sent apples to Malaya and South Africa to her neighbour Southern Rhodesia. Pears are less often eaten as fresh fruit, for most of them are canned in syrup. Britain takes 6½ thousand tons of fresh pears from South Africa, but new methods of refrigeration are likely to increase transport so that Australia may increase her export of this fruit. Plums, also, are used locally, largely for jam making, but again South Africa is alone in exporting fresh fruit, usually in the higher grades that repay packing with care.

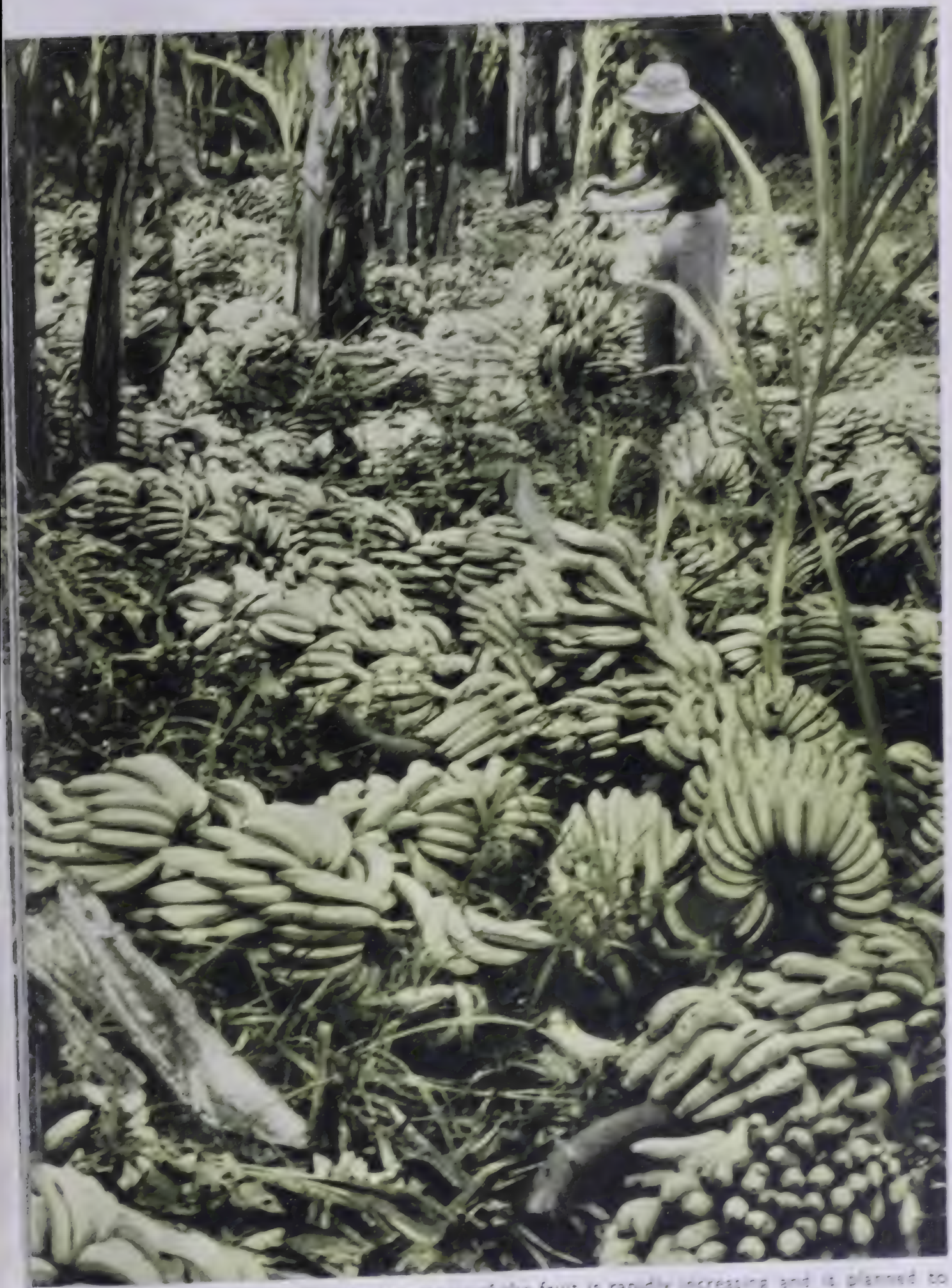
Canada, Australia, South Africa and New Zealand all grow peaches on a large scale. They are perhaps the most popular of canned fruit and most of these go into tins. It is this, of course, which accounts for the great production, the packing and refrigeration for shipment have made transport of fresh peaches between 1930 and 1939 [illegible] South Africa doubled their production.

Citrus fruits are the [illegible] for export, as they do not [illegible]

A young apple orchard in southern British Columbia (below), a Canadian province which specialises in this crop. Before shipment, the fruit is graded as to size, packed and placed in cold storage (above).

Photos: Canadian National Film Board

Bananas being taken aboard ship at Port Antonio, Jamaica. Cooled holds and special ventilation are necessary to keep the fruit in good condition in transit, and unloading is done mechanically to reduce handling.



banana forest in the Cameroons whence export of the fruit is rapidly increasing and is planned to
ch 8,000,000 stems in 1952. Production is sponsored by the Cameroons Development Corporation
ough which Britain has vested the former German plantations in the people of this Trust Territory.

the principal home of the tinned pineapple, grown mainly by immigrant Chinese in Johore. When the country was occupied by the Japanese in 1942, the industry came to a standstill. Production has begun again and there are canneries in Johore and Singapore; it is hoped that exports will improve. Australia produces about 4,000 tons of tinned pineapples yearly (but she has seven times as many peaches). Natal, Kenya and West Africa also grow pineapples on a smaller scale for local consumption; in Kenya, a new cannery near Nairobi will export the tinned fruit to Britain and other markets.

At an orange farm near Port Elizabeth, South Africa, the f is harvested by pickers wearing gloves and using special cl (above). After grading and wrapping, the oranges are packe boxes, sealed by an automatic nailer (right) and dispatche the cooling station (bottom right) to await shipment overs

The trade in tinned and dried fruit has, of course, revolutionized the whole aspect of fruit-growing on a large scale, since it does away with those problems of storage and transport which make the movement of soft fruit from one country to another v difficult. Most soft fruits are suitable for canning, though they differ in popular There is also a regular trade in dried fruit, prunes and apricots being most in dema But canning has become a steadily expanding industry in the fruit-growing countr and this greatly increases the call for sugar. After the war of 1939-45, only the Un States of America could produce tinned fruit on a great scale, greater in fact than e before. It may be many years before Britain can have the quantity of tinned fruit, ap from such fruits as she herself produces, to which she was once accustomed.

FIGS and dates, valuable as they are for food, are not exported in signific quantity from any Commonwealth or Empire country; India and the Anglo-Egyp Sudan grow a date crop, part of which is sold abroad, and dried figs are exported fr Cyprus. Figs also, as a dessert luxury, are grown in South Africa and in Queensland

Another vigorous industry closely connected with soft and citrus fruit-grow is jam and marmalade manufacture. Both are white man's taste—so that Britain is home of both, though the jam industries of Canada, South Africa, Australia and N Zealand are important. The introduction of jam packed in tins—instead of in glass ja has made transport easier and thus extended the range of the industry's export m

The grape vine, which in Europe was native to the Mediterranean basin, g us grapes, raisins, currants and wine. Vineyards have reached their highest perfec in France; but with European settlement overseas, they have been established in So Africa and Australia. The vine is also cultivated in Ontario, Canada, and other p of N. America where it was found growing by the earliest explorers. Cyprus, of co has had its vineyards from the earliest times. Fresh grapes, excellent as they are, are norm

Wine from Commonwealth Vineyards

sumed locally and not transported, though from time to time South African grapes plentiful and cheap on the London market. Export trade mainly consists of grapes d in the sun, which become raisins, sultanas or currants according to the special e of vine grown.

THE Murray Valley area of Australia, where extensive irrigation has enabled the fullest use to be made of the favourable climate and hot sun, is the home of a great ustry around Mildura. An intensive and prosperous cultivation has been established him quite a short time in what was formerly waste land; there are today 37,000 acres vineyard in this part of Victoria. To produce one pound of dried fruit requires three nds of fresh; since Australia's average is now 60,000 tons of raisins and 18,000 s of currants a year, her production of grapes is large indeed. Most of Britain's and nada's supplies of dried fruit come from Australia. The vineyards of South Africa, ugh mainly intended for wine, produce several thousand tons of dried fruit as well, l Cyprus also deals in raisins and currants.

But the principal purpose of the vineyard is to make wine, and all these countries do so—Cyprus for many centuries, Canada for her own use from the time of French settlement, South Africa (Cape Province) from the time of Dutch settlement, and Australia (mainly South Australia) in comparatively recent years. It is quite easy to press out grape juice and ferment it into wine. But it requires the experience of many generations to make it into *good* wine. Both the new Commonwealth wine-makers are gaining that experience. South Africa's Constantia vintage, in fact, was rated high by connoisseurs even in 1795. Whilst neither Australia nor South Africa can compete with Continental wines in foreign

ntries, a preferential rate of duty over ign wines enables them to sell more aply in Britain where the popularity of mmonwealth wines is growing as their lity improves and as they become better own. Cyprus wine, also, is regularly sold London. Of all the countries of the Comnwealth and Empire, however, (excluding alta and Cyprus), Britain alone consumes ne to any great extent. Both South Africa d Australia, therefore, produce mainly the ourite port and sherry types of sweet wine.

Cutting pineapples on a Malayan plantation. This harvester works with astonishing speed too, as the pressure with which he tosses the pines into his basket. The slender tree papaws from whose fruit papain, which makes meat tender, is obtained.

The Story of Tea, Coffee and Cocoa

All these three have some things in common. As the source of a stimulating but
oholic drink they were known from very early times in their original countries of
but have since become universally used. In each case they owe their world-wide
the presence in minute quantities of a stimulating drug which, though in itself
ous, is beneficial in the quantities and under the conditions present when the leaf
is used in the normal way. The principal drugs concerned are caffein in coffee
(which also contains tannin) and theobromine in cocoa.

Britain is the greatest
of Tea in the world;
heless she did not
ce this delicacy, which
w become a necessity,
brought to Europe by
rtuguese in the sixteenth
, and Pepys, nearly a
d years later, could still
of it as a curiosity in
n. At that time only
was known to produce
d it was not until some
undred years later that
cultivated elsewhere. In
30s the tea plant was
to grow wild in Assam.
ltivation was taken in
it was planted in other
of India and after the
ction of the coffee plan-
in Ceylon in the 1880s,
aced them as a planter's
Later still it was brought
st Africa. Today the
pal sources of the
's supply—outside China
India, Ceylon, Kenya and
land; to a slight extent, Natal and recently, the Cameron Highlands area of Malaya. A
crop is grown in Mauritius. England, Ireland, Australia and New Zealand drink more
r head than any other country. Both India and Ceylon, in spite of their vast production,
ne only a low average per person (four ounces per year in India—about 1/40th
English man's pre-war average). But in both countries the demand is rising

Chinese worker grooves out the eyes of peeled pineapples in one of Malaya's six canneries. Well over quarter of a million cases were exported in 1949.

A is gathered from a shrub which, growing wild, may reach twenty feet, but
which in cultivation is pruned to a flat bush only three or four feet high. After
g, the tree bursts out into a "flush" of young shoots. The bud nip, and the next
r sometimes three leaves are picked daily—the smaller the leaf the higher the grade
a. During the season of growth—March to September—these flushes occur at
als of a week or ten days. Picking is continuous, since otherwise the flavour is
d. Indian women have proved the fastest and most adept at this task.
ter picking, the leaves are spread out to wither and are then rolled. Next they are

allowed to ferment slightly, and turn from green to almost black, when they are fin dried brittle and graded. Since quality and flavour are the most essential requirem within the Commonwealth and Empire, tea is grown in scientifically managed plantat and processed with the utmost care in factories. The various flavours and qualities dep upon the soil, and upon variations in the processes of withering and fermenting. Fin the art of the tea blender is enlisted to combine different types into a mixture which w give the required strength and flavour for the various market requirements. Brick used in India and Asia, is made from tea dust compressed into blocks of a pound two in weight.

ALTHOUGH tea is a fairly new industry in Ceylon, this Dominion is now one of largest exporters. After fifty years of successful coffee-growing, the coffee bug virtually destroyed this industry by 1886. Within a year, however, a wide area had b planted with tea, and within fifty years half a million acres were in production. To Ceylon's tea industry has been described as one of the best and the most scientific organized in the world. Most tea is grown on the hilly country, on plantations ow and managed by British planters, and the picking and processing is done by Ta an Indian tribe, some of whom permanently settled in Ceylon, or coming there to work for a spac years. India herself produces m double the amount that Ceylon e but markets less abroad; her ex crop fetches about £23 million, Ceyl about £28 million; of the comb total some £74 million worth is to America.

Forty thousand pounds of sultanas on the drying lawns at Mildura in north-western Victoria. This is the centre of Australia's dried fruit industry which supplies most of the needs of Britain and Canada.

Photo: Commonwealth of Australia

We owe the introduction **Coffee** into Europe to the Tur invasions of the sixteenth centur served as a stimulant to the Muslim whom wine was forbidden. Later used in Vienna, and by the eighte century had reached England. C houses, the forerunners of our mo clubs, became an important featu social life. We have seen that Ce was originally a great coffee produ Jamaica likewise became famous her Blue Mountain coffee of superl quality, but again the plantations been virtually destroyed, this ti soil erosion. But after the wa 1914-18, a new source of su appeared in East Africa, and Uganda, the Kenya Highla Tanganyika and Nyasaland all pro crops for export to Britain, S Africa, Australia and Canada.

nough her production exceeds that ny of these countries, exports only nall amount. Coffee is grown also Sierra Leone, British Guiana, parts Malaya and to a small extent in tal and Queensland though so none of these territories produces re than enough for local sumption.

Columbus, when he discovered erica, brought back to Spain the it of a tree which grew wild in the pical forests, and from which the ives prepared a drink. Later, in xico, the Spaniards learned this art, more than a century passed before coa became fashionable in England, l it was much later still—not until middle of the last century—before was cheap enough for all and ceased be a luxury.

Although not native, the cocoa e grows well in tropical West rica. It was introduced there by an rican in 1879, and ever since has en grown by native farmers to sell to ropeans. Today Nigeria and the old Coast produce half the world's pply, and even sell £27 million rth to America. High-grade cocoa also grown in the West Indies and ed for chocolate.

Cyprus has cultivated grapes for centuries and today has good exports of wine, especially to Britain. Below the vineyards, potatoes—not much grown in the past—are now produced in quantity, 10,000 tons of the spring crop alone being shipped overseas in 1948.

Although cocoa is prepared as a powder for drinking purposes, it is the quite cent' development of processing the "nib" or kernel with sugar and milk to rm chocolate which accounts for the great demand. By 1939 world production had adily risen to over 700,000 tons of beans, but the world's appetite for chocolate is ite insatiable. It is, therefore, a disaster, not only to the Gold Coast but to all of us, at the cocoa farms there should have been attacked by the Swollen Shoot disease ich destroys the yield, and is so highly infectious that the only remedy is to cut down l burn all the affected trees. This disease has most seriously injured West African oduction, and since not only does the farmer grow and harvest the trees, but all womenfolk and family work at splitting the husk, extracting the beans and ying them for sale to the buyer's agent, it has caused great distress to the peasants. eplanting is of course carried out, but as the tree takes ten years to reach maturity, it is slow business. For this reason new areas in Malaya are being surveyed with a view to anting.

Cocoa is a good example of a "cash crop"—that is to say, a crop grown by native easants solely for the purpose of selling to others and not for their own use. The mptation to make more money in this way, rather than by planting and harvesting

foodstuffs to overstock themselves, is very strong, and has led to excessive areas being devoted entirely to such saleable crops. Such cultivation generally falls a victim sooner or later either to disease, soil erosion, or to bad seasons, and then if the one crop fails, there is neither money nor food. For this reason tropical farmers are encouraged to increase the range of their activities, and produce foodstuffs and other crops, so that henceforth countries like the Gold Coast should not be so entirely at the mercy of circumstances if their one crop should fail. The final aim of this policy will be to make the production of these commercial crops more and more the tropical colonies concentrating one product or two particular

Drying tea on an e
Dickoma District of C
the largest exporters.
and processing are do
Tamil workers. Tea of
is also grown in se
territories in Cent
including Kenya, N
Rhodesia (Ze

Sugar, the

produced sugar centuries before the time of Christ; it was known to A
Egypt, and exports of sugar from the East were traded in Europe in early
and was landed in England before Chaucer was born.

In more recent times the West Indies have been the home of sugar
have been introduced by Columbus, and the early settlers grew it to trade w
and Spain. Sugar estates were established in Barbados in 1640, in Jam
The sugar cane was found growing in the Pacific by Captain Cook in 17
planted in Australia by convicts as early as 1817.

baskets filled with the young leaves. Tamil women pickers in a Ceylon tea garden make their way
weighing shed. Next the tea will be lightly packed in sacks and taken to the factory for processing

The sugar cane is planted from cuttings, in rows about four or five feet apart plant a foot or more from its neighbour. The ground must be well cultivated before and kept clear of weeds. The stem, which contains the sugar, reaches a height of ten feet, the growing period varying from a year to eighteen months. During the the rainfall is of great importance; if there is too little, the cane will not grow full stature; if there is too much, the juice will be diluted and the yield of sugar extraction reduced. Natal is favoured by cool winters which make the cane take years to ripen, and in consequence the average sugar yield is high.

IT is important that the sugar be cut at the season when the juice is reckoned to the highest sugar content, and this varies from country to country. June June in the West Indies, August to January in Mauritius, May to December in are some of the harvest periods. After the cane has been cut as near to the ground possible, it is trimmed of its top and dead leaves and carried to the factory. Today it is a bulky and heavy crop at this stage, light portable railways are run into the the cane is loaded on trolleys and these are then pushed until they reach a loading on the railway proper. As each field is cut, this light railway is taken up and brought a new scene of operations. A second crop, known as the ratoon crop, is grown from old plant after the first harvest, but after that the land must be replanted with new cane if the yield is to be maintained.

In the old days cultivation, cutting and transportation were done by hand pressing as well. It is heavy work today, even with the assistance of machinery cutting is still done by hand and all these operations must be carried out under a hot sun. From the earliest days the planters of the West Indies relied on slave labour imported from Africa. This terrible traffic, carried on for over two centuries, laid the foundation of many fortunes. Its abolition in the British colonies in 1834 materially affected prosperity of the planters, though contrary to their expectations it did not destroy industry. The end of slave labour corresponded with the introduction of machinery and steam power to undertake much of what was formerly done by hand. Today carriage of the cane from the fields to the factory, the crushing, and all the subsequent operations are done mechanically. The whole extraction, in fact, once the cane reaches is a factory process; but hand labour is still necessary to plant and to cut the cane. Thus cane sugar production is still confined, apart from Australia, to countries with a plentiful supply of African or Indian labour, able to do field work in the tropical heat.

Where Empire Sugar is Grown

Jamaica is still the leading producer in the West Indies, followed by British Guiana and Trinidad. But within the last hundred years other Commonwealth and Empire countries have developed industries—British Guiana (brown sugar is still known as Demerara in the shops), Mauritius, Natal, Australia and Fiji. Mauritius, although a small island, has increased her production from 500 tons in 1812 to 416,000 tons today, and sugar is her principal industry. The great increase in recent years is largely due to improved variety of cane. Australia, the only sugar grower to depend on white labour, has experimented with mechanical methods of cultivation and cane-cutting, and supplies to Britain, New Zealand and Malaya, as well as providing for her own people. On an average, the Australian uses twice as much sugar as an Englishman or a Canadian. The main crop grows in Queensland. An Australian company also controls the industry in Fiji. Here the cane is grown by Indian peasant farmers under the company's supervision.

·t Gives One Third of the World's Sugar

ed farms of ten acres or more, and is bought and processed by the company's lls. India, although her total production is very great indeed—over three million has no surplus for export and, in fact, needs to import still more to supply her llion people. Most of her production is in a crude brown form known as *gur*.

The modern sugar processing industry is highly mechanized. The cane is crushed ccessive times to extract the utmost juice, and the resulting liquid mixed, cleared urities, clarified and then crystallized. The thousands of tons of woody fibre left xtraction (known as *bagasse* or *megass*) serves as fuel for the furnaces, though nents are taking place to put it to industrial uses; in particular, as a source of e for making artificial silk. The leaves are ploughed in for manure, and the -cake" or muddy residue after filtering is a powerful fertilizer. As a by-product of stallization process, great quantities of sweet syrup, known as molasses, are produced is is used for sweetening and also as the basis for the distillation of rum which a, Barbados and British Guiana all produce for world export; Jamaica's sales abroad are not far short in value of her sales of sugar.

Sugar is also contained in vegetable products other he sugar cane, including ot and similar root crops, (where it is changed by ntation into alcohol) and p of certain trees (maple). It is over a hundred since it was found that could profitably be ex- from the coarse white beet. This grows in north- titudes, and is produced t entirely in Europe, North ica and Canada. Britain about half a million tons lly, Canada about one-fifth s amount. Naturally this e of supply, grown in ries formerly entirely ndent upon the tropics for ugar, has seriously affected ane-growing countries. e world needs all that can wn; part goes to industrial ses and the production dustrial alcohol; more- the canned fruit, jam, hocolate industries, all of recent and expanding, ume ever larger quantities ugar. Hence, although beet sugar constitutes hird of the world's supply.

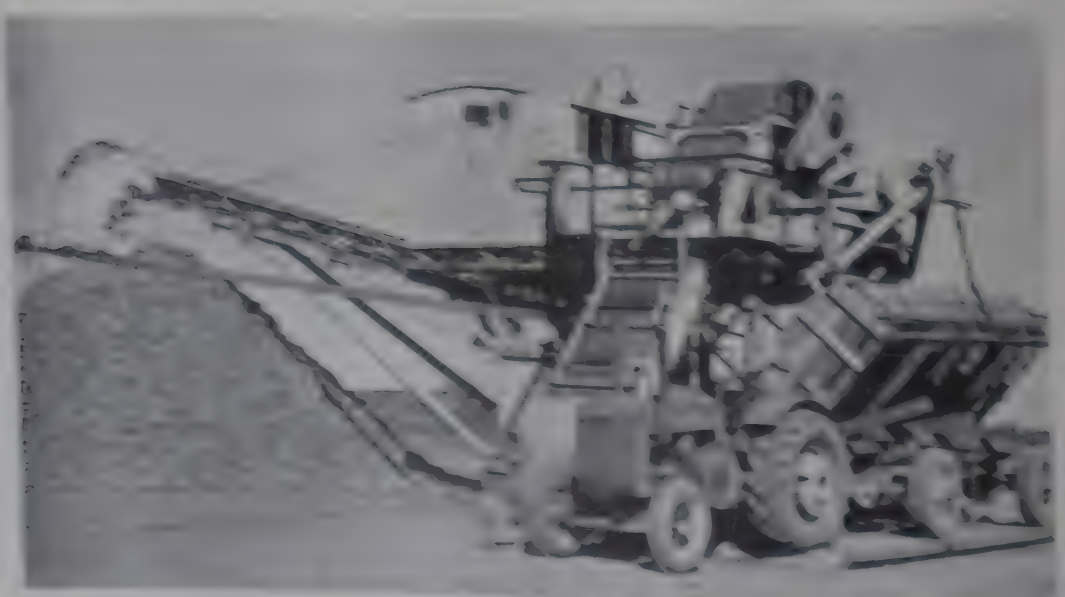
In Kenya, European farmers have taught the Africans how to grow coffee. The crop is picked (below) and the fruit or—"cherries"—taken to one of several co-operative societies which pulps it and dries and bags the beans.

On a cocoa farm in the Gold Coast, the pods (when ripe) are chopped off with a machete. They are then split open (below) and the wet beans, next to the testa, are removed. After fermentation, the beans are spread out on mats to dry.

Australia (below), the stems are trimmed of leaves and piled in heaps for ...ves by light railway at a modern factory at Belapur in Southern India (above) ...ith 1,000 tons a day. Trainloads waiting to go in are seen on the sidings.

...c, like the Brazil, ...packed within the ...tore the nut can be ...he husk must be ...nacked and the meat ... rather important ... be used for oil ...housands of tons ... nuts of many kinds ...and the temperate ... crops for oil ... in the tropics, ... groundnuts and ...he natives, and ..., are incredible ...d shelling nuts by ... the economic ... nuts depends on ...sses can be done ...ly. Many varieties ...nomic value than ...erwise, on account ... they present to ... The groundnut

Many Uses of the Amazing Coco



Sugar beet arriving at a Canadian factory. The whole wagon is dumped and the beet washed by this huge automatic unloader. The Dominion produces about [illegible] tons of beat sugar every year.

The copra industry in Fiji: one tree may carry as many as 50 to 80 coconuts at a time. After collection, the nuts are split and the "meat" cut out with a special knife (left), split with a heavy knife and the flesh is extracted—family work carried out by the native—at an incredible speed. The flesh, cut into strips, may be dried in the sun, or over the smoky fires of the huts, or—in modern times—in special ovens.

Only coconut flesh dried by the oven method today gives copra suitable for the extraction of edible oil, the other ways being inferior and the product suitable only for industrial

copra is then generally exported, and pressed elsewhere by mechanical means after the oil is extracted, known as *Poona*, is a rich and valuable cattle food. Hitherto it has been the usual practice to ship copra to Europe for extraction, but the producer countries are today anxious to establish mills on the spot and sell oil abroad. This policy has a threefold advantage: to set up industries to go hand in hand with farming, to conserve the by-products for their own use as cattle food, and provide more and better paid employment for their own people.

On the other hand, the world shortage of fats is so great and the supply of raw materials so short that it is essential to extract the maximum oil in the most efficient way and this cannot always be done locally. Similar problems also face the oil palm and groundnut industries.

No picture of the Pacific is complete without some of these characteristic tree like giant feather brooms, decorating the landscape. The opening up of the Pac after Captain Cook's voyages was mainly due to the trade in copra which attract adventurers from all over the world. Although the days of the hard-bitten traders a now over, copra is still of the greatest economic importance.

FIJI, Tonga and New Guinea are the major Pacific producers. Before the war, Mala was developing coconut estates, under European management, as an alternative rubber, and also planted the tree on land reclaimed from swamp. She exports both cop and coconut oil, but, as with all her production, this suffered during hostilities and w take many years to regain its former output. The West Indies export copra, but in Jamai and Trinidad factories have been established to make margarine, cooking fats and soa and in time these may well supply the total requirements of all the islands in these produc Production for these large-scale operations is carried out on estates, but, in addition, t coconut grows freely throughout the islands, and is put to immediate use by every peas and landowner.

Ceylon is a producer on a large scale, particularly of the highest grade nuts wh are made into desiccated coconut used throughout the world in cakemaking a confectionery. The industry is carried out almost entirely by the Sinhalese, whilst tea industry is mainly worked by Indians. India consumes her own production of cocon and their products; especially in the coastal districts of Southern India where they are mainstay of the people who have developed a large industry in coir matting, bask and ropes made from the fibre. Zanzibar also exports copra and coir ropes.

Certain ingenious uses of the coconut have been developed by Americans in Philippines. For example, by a special process a rich coconut milk can be produ and bottled, also coconut syrup and coconut honey. Such uses might, if successf marketed, provide a new range of valuable and novel products.

Rich Products of the Oil Palm

Second great source of vegetable oils is the **Oil Palm**, a native of West Af Palm oil has always been one of the most valuable exports from the West Coast. tree grows wild, and until comparatively recently the fruit was collected by Afri from the jungle. Latterly, however, plantations have been laid out, since by grow under control selected strains of high oil content, maintained by proper cultivation, ca made to give a better yield. The fruit, not unlike a yellow olive, is borne in big clus averaging 30 lbs. in weight, though they may reach half a hundredweight. A cl may contain over a thousand separate fruits. Each tree has six to eight clusters at top of the stem where the leaves begin. Trees bear after six or seven years and cont to fruit until forty or fifty years old. There are two crops a year, the heavier in the season, the lighter in the wet.

One feature of the oil palm is its wide distribution over the whole tropical fo belt, including French Equatorial Africa and the Belgian Congo. Among British colo Nigeria is first, though here the oil palm is now being displaced by cocoa. Sierra L follows; cocoa in the Gold Coast has displaced oil as a cash crop, whilst The Gam too small to have a big commercial output.

The oil palm has been introduced as a plantation crop into Malaya where proved varieties of stock planted before the war are now bearing fruit. It is also gr by the Malay peasants as an alternative cash crop to rubber, to reduce their depen

West Africa, fruiting heads of the Oil Palm, which may vary in ght from 7 lbs. to as much as 56 lbs., are cut from the tree with axe by an African harvester who scales the trunk aided by his mbing loop (right). In Malaya (above) cut heads are transferred m a bullock-cart to the light railway truck in which they will be uled to the factory for processing and extraction of the oil.

Food from the Commonwealth and Em

upon a single commodity. To a more limited commercial extent the palm is also in the West Indies.

Two kinds of oil are prepared: palm oil from the soft pulp of the fruit, palm kernel oil from the stone which the fruit contains. The latter is richer and is used in the manufacture of margarine, cooking fats and vegetable oil, whilst the former is mainly employed for industrial purposes, particularly [illegible] laundry oil soaps.

When the bunches have been cut down by a climber, the heads are dried in the sun until the fruits shrink and can be separated. After a short fermentation, they are boiled, then pressed. The oil runs out, leaving pulp and nut. The nut is then dried and cracked, and the palm kernel oil extracted by pressure, preferably in

PALM oil has been used by the natives both for food and for lighting since immemorial. As food, it is one of the richest in vitamins, and its use in cookery and stews (palm oil chop) goes a long way to restore the balance of an inadequate diet. As an article of trade, the oil has been exported from very early but only in the last fifty years has its production become a vast industry dealing in millions of pounds. This enormous export has, of course, greatly increased the prosperity of the growing areas—Nigeria, Sierra Leone and Malaya. At the same time, the native methods used by the natives to prepare the oil are wasteful and do not use the land to the best effect. Without expensive machinery no more than half the available oil can be expressed by hand, and this often is of inferior quality. We cannot afford to waste natural resources thus.

From this enormous stockpile in The Gambia, groundnuts are carried in bags up a gangway to the ship moored in the nearby river, from which the photograph was taken. Each porter is paid his fee as he passes the fence.

On the other hand, [illegible] large-scale oil mills in order [illegible] the maximum production [illegible] the natives of a valuable [illegible] dustry, for all this work is [illegible] in the villages by men and [illegible] and all can thus add to their [illegible] Other evils also may follow [illegible] placement of village life [illegible] factory and industrial production [illegible] British West Africa an interesting [illegible] step is being taken by the [illegible] small mills which can be [illegible] operated by the peasant [illegible] through a village co-operative [illegible] and which increase the [illegible] This is a compromise between [illegible] traditional hand methods and [illegible] highly industrialized oil mills [illegible] the Belgian Congo. But it is [illegible] sure that with the world [illegible] great, there should be room [illegible] which may amount to [illegible] the potential supply.

You may know [illegible] better as peanuts or [illegible]

...undnuts Easy to Harvest and Shell

...and ripen beneath the surface of the earth, but they are true nuts nevertheless, ... a small annual plant of the pea family. Unlike the coconut or oil palm, it must ...ch year and cultivated, but this is offset by the ease of collection. Also it bears ... within a year, so that the farmer does not need to wait for the reward of his ...has an annual return. Finally it is very easy to shell. Two women with pestle ... can shell and winnow a ton of nuts in a week, but a new machine can decor... ...nt in an hour. For all these reasons it is an ideal crop for peasant cultivation ...areas.

...anut is very obliging, for it will grow in most hot countries where there is never ..., provided only that there is adequate rainfall in the wet season. Originally ... South America, it seems to have been brought to Africa by the Portuguese ...enth century. It spread rapidly, even as far afield as the East Indies, India ... It is grown in the United States, and a small crop is raised in Australia. Its ... is easy, requiring only that the top soil be kept thoroughly loose to allow the ...ll and make growth; it is simple to harvest and to shell; it is most nutritious, ... roasted, mashed, boiled into soup or ground into flour. The green tops are ...e in place of hay; the residue of the nut, after the extraction of the oil by ...aker rich cattle cake; even the brown husks can be compressed into fibre board ... industrial uses.

...ough in both Britain and America the nuts themselves are only a secondary ...being used in confectionery and in the form of peanut butter, they are the ...od of millions of people in the tropics. India, with eight million acres under ..., is one of the largest growers, but this huge crop is mostly consumed by her ...e. Nigeria is the leading exporter. Uncounted thousands of tons are grown ...can peasants for their own use, but over and above that more than 350,000 ...elled nuts were purchased by Britain in 1949 from Nigeria and The Gambia ...ese huge bulk shipments are to make oil. The extraction is done in mills in ...d most of the oil reappears on our tables as margarine. It could, of course, ...r cooking as a substitute for other oils and fat.

...two tons of nuts will make half this quantity of margarine; thus the ...unt mentioned above would provide half a pound of margarine weekly for ...en million people, and about four pounds of cattle cake for two million cows. ...orld scarcity of fats after the war of 1939-45 led the United Nations Food ...ulture Organization in 1946 to recommend that more oil seeds should be grown ...there was suitable land. Following up this recommendation, the British ...nt in the same year embarked on a bold experiment which had a double object: ...crease in the amount of fats available in the world, and a rapid development ...retches of unused land in East Africa. It was proposed in the course of five ...ears to clear of bush and plant with groundnuts 807 areas of 30,000 acres ...in Tanganyika, 17 in Northern Rhodesia, 10 in Kenya. Work began in ...1947. A new deep water port called Mtwara was built on Mikindani Bay in ...anganyika, and a railway was laid from there to Nachingwea, the central area ...nded to develop.

...e starting of the scheme was entrusted to a private company, but in March, ...management was taken over by the Overseas Food Corporation, a body created ...erseas Resources Development Act of 1948, and responsible to the Overseas ...d Food. Immense enthusiasm and hard work were put into the first months of

...uts in Tanganyika. Mechanical diggers drive ...plants (above), lifting and shaking them free from ... The nuts are left to dry in the sun for some time ...re being gathered up and bagged

Coast and Northern Nigeria, is made into vegetable butter and is widely used by the Africans. Other plants, again, are hardly known outside their own countries: the Bread-nut in Jamaica, the Cohune in British Honduras, the Dika and Owara in West Africa, the Wa'ab nut in Somaliland, the Guma in Sierra Leone and Nigeria, are all relished by the people of those countries.

The trade in Spices is one of the oldest in the world. It was valuable in the days of Alexander the Great...

...n across deserts, ...unmapped seas, ...alues of the Fast ...factures of the ... so they bought ...unknown peoples ... and tales of riches ...which grew into ...ere told and retold ...routes that led from ...s up to Constanti...ople and Venice, ...al, by slave porters, ...e rocks and shoals ..., by donkey and ... bales made their ... which might last ... or even more, of ...ider spices were

... to see why they ...ed, apart from the ...n at all times set ... and curious. In ... even a king must ... upon local produce

Food from the Commonwealth and Em

—particularly meat of uncertain quality from the farm or the forest—flavoured seasonings were in great demand to add taste and variety to the of the rich. Even greater, however, was the demand for medicines. Many an of healing—if indeed the powerful concoctions of which we read in early heal—came from the East. Spices were the mainstay of medieval medicine were eager buyers throughout Europe for as much as the merchants could b the price repaid those months and years of difficult and dangerous travel. N being dried and of small bulk, they could stand the long delay without dete The spice trade, in fact, is one of the few whose importance in world trade has d in modern times.

EVEN in antiquity the principal spices were much the same as they are toda cinnamon, nutmeg and mace, cloves, ginger, camphor and, above all, Many were introduced into Europe after the Crusades, since the Arabs were, i intermediaries between Africa and the Far East. All of these had medicinal use cloves, cinnamon and pepper were used as condiments. Pepper was the most v and even in England payment of a given quantity was sometimes demanded or some service, in place of money.

Amongst the many incentives for exploration was the desire to tr directly in spices and secure some of the huge profits which they commanded. knowledge and skill on the seas developed, so it became more possible and find cheaper and more accessible sources of supply from which the merchandise carried by sea straight to Europe. Ceylon, West Africa, Sumatra and Java we by the Portuguese; Columbus sailed to the West Indies; Vasco da Gama to India, and early in the sixteenth century the Moluccas or Spice Islands, home of and nutmeg, were reached. Cargoes now came by sea directly to Portugal, to the Netherlands and to England. The great overland routes were dow with them the wealth of Venice. A new generation of merchants on the At board began a new age of wealth, leaving their mark on London, Amsterdam, and Rouen.

Today pepper is still the most important spice in commerce. It is a Ceylon and India, and though many varieties exist, pepper as we know it c from the berries gathered from a type of vine. It has been introduced into M Sarawak, though the bulk of imports still comes from India. Both black pepper are from the same source, white being the berry dried after the outer been removed. The red pepper or cayenne, used greatly in African native co different plant and is enclosed in a sheath-like pod.

FROM the West Indies come nutmegs and mace, ginger and pimento. The nutmeg is the seed or stone of a fruit about the size of a peach, g trees. When the fruit is ripe, it is split; within is the seed case wrapped in layers of what appears to be crimson lace. This sheath is removed and dr the colour fades to yellow. This is mace. The nutmeg within bears d markings on its wood-like surface where it has been held tightly by t Within the West Indies, Grenada is the principal exporter, and in recent produces fifteen nearly two-thirds of her external trade.

Ginger, the home of which is China, is the dried root of a tropical plant as virgin or root ginger according to the part used, green being superior to th is grown extensively in India. Jars for export in dried form and for use

Pepper vine on a plantation on the Malabar Coast in India which furnishes the bulk of the world's supplies. After picking, the berries are dried in the sun (below).

Food from the Commonwealth and E

Unfortunately even the aromatic clove is subject to disease. In re disease known as "Sudden Death" has attacked the plantations in Sout great havoc. The very future of the clove industry is at stake. The dis studied, both in laboratories and by a party of scientists sent out from E islands, in order to find the cause and a remedy. But already over half the Zanzibar have been killed and so far the battle against this scourge has not

An extract from the pawpaw fruit, known as papain, whilst not strictly proved of much commercial value in modern times. This fruit grows the tropics, especially in Malaya and the Pacific Islands, and also in the It is sometimes cultivated and there are plantations in Tanganyika for t papain. The natives found that when the fruit was cooked with meat it had of making the meat tender. Papain is prepared for this purpose commerc used in the processed and canned meat industry.

Two factors have increased the use of all spices in recent times. One factors of Indian curry powder, since this dish is now popularised throughou The second is the widespread use of manufactured sauces, which are large of tomato pulp heavily spiced and seasoned with vinegar and cassareep, cassava or similar roots. Sauces and pickled vegetables include many spices in quantities, and serve the same purpose as did the raw spices of olden ti variety and to disguise what might otherwise displease our exacting taste

Fishing Grounds of the North Atl

Although Man in his earliest days lived on the wild products of Nat settled down to rear domestic herds and cultivate crops. From this all the fo industries of today have developed, save one. That one is fish; and for years—until the middle years of the twentieth century—Man sought fish could find them, and depended on Nature to do the breeding. But he beg with alarm that certain edible fish were disappearing from the grounds been accustomed to find them in quantity. The herring, for instanc deserted the North Sea. Scientists began increasingly to study the rem fish in known particular areas, and to try to find ways of restoring fish to had left. Meanwhile fishermen had to go further afield in search of this re

Most fish live in waters above the hundred fathom mark (that is, dow deep). The world's biggest fishing grounds are in the North Atlantic, wi underwater shelf known as the Grand Banks runs out for three or four h from the east of Newfoundland and Labrador. The fishing trade has be and most important industry all along that coast from the time of its fir and French, Dutch and British have all at times disputed the possession of shores. Fishers of all nations have always fished the Grand Banks; for the harbours and out is open to all.

The modern equipment of a deep-sea fishing fleet is far in advance fishing smacks of coastal waters. Powered by Diesel engines, the boats a electric lights, radio and many electrical devices for locating the shoals of f which now includes Labrador and Newfoundland, lands about half a m fish a year. On the fishing side the principal catch is cod, haddock and

ommerce is the bud of the clove flower (1), picked and
grown on a tall, bushy tree (2). In the islands of Zanz-
a, which produce 82 per cent. of the world's supply,
ught for examination by an officer of the Clove Grow-
on (3) and later packed in special bags for export (4).

In a British Columbian salmon cannery. The fish are brought straight from the sorter on a conveyor, to be cleaned, canned, sealed and then wheeled into a retort to be cooked.

Photo: Canadian Pacific Air Lines

…nneries for Crawfish and Tunny

…caught off the Cape, whilst the Atlantic coast of South-West Africa, off Walvis …d for its haul of snoek. Perhaps the most important catch is snoek [illegible] … dried and sold to the Kafirs and, indeed, exported to other parts of Africa. …ropean market crawfish have provided a minor industry, their tails, …, being frozen for export; a cannery for this product has been set up …d of Tristan da Cunha where tunny fish may also furnish a canning industry …

…OUGH the Caribbean seas are famous for their rich variety of [illegible] …ds and rare and curious fish, these are not of commercial significance. It seems …an currents do not allow a high concentration of the [illegible] which [illegible] … the shoals are not large. On the other hand, the West Indian islands offer …easy access to the sea, so that although the haul of coastal fishermen may …, it is of much local importance to their own tables. Kingfish, snapper, … and the like are caught, whilst shellfish and turtles are plentiful, the …nds being noted for their export. The Bahamas are a great resort for game-… tunny, marlin, the [illegible] a fighting fish which may reach eight … and over 300 lbs. weight. But that is a rich man's sport, far removed from … and arduous toil of the fisherman who provides so much of the …d.

…other big fish, however, is of increasing economic importance—the shark. … oil has a high vitamin content; while shark hide can be made into leather.

…of Canada's Pacific coast yield an abundant harvest of herring. Here they are being lifted … net by a brailer, or huge scoop net, which is operated by a power winch. The man with the pole guides the brailer into the tightly packed mass of fish.

Photo: Canadian National Film Board

Food from the Commonwealth and Em

and the flesh can be used as meat. This industry is being developed by an company in British Honduras and a French company in The Gambia.

Although some of the world's catch comes from the sea, there is a stor waters: fish in rivers and lakes all over the Commonwealth and Empire. T inland fisheries are those of Canada. Too much attention has been paid in t to increasing the fish in tropical The lakes of U Nyasaland, w always been importance for to-be scientifically This entails s habits of the fish suitable conditi to feed and m ascertaining: ho be most cheapl bulk, what is season and ho best prepared f It is also possi fish in fish fa controlled cond thus stock the feeding grounds

All this w important st improvement o particularly w numbers of A employed wor African peoples, of c always used the rivers taking the fish in nets or spearing them. T have a great future in La in Uganda—some 2½ mill caught yearly and salted or, the wealth of food i African lakes has not yet than reached. The appr Fisheries Research Uni mainly staffs in Colonia should in a few years t substantial contribution to welfare.

A shark fishery has been established in British Honduras to exploit the commercial uses of the fish. Though oil from the liver is most in demand, markets are being found for almost every part. The sharks, which may weigh up to 400 lb. (right), are caught in a large net with a 12 in. mesh, measuring 200 ft. by 12 ft. (below)

part of the diet of the people of Malaita and the various waters around the ine are extensively fished. This gaily-decorated craft with high, up-pointing bows s one of twelve different kinds used by the fishermen of Malaita.

Part Three

LOCAL DIETS AND PLANS FOR THE FUTURE

MEAL TIME in Africa? Or India—or the South Seas? Here we tell you about the daily food of some of the native peoples of the Commonwealth and Empire, and of some of the things they grow and eat which we do not. Surprisingly different many of these are, and most interesting the ways in which they are prepared and the etiquette which attends that preparation. Unhappily, too many of the millions of Commonwealth and Empire citizens who depend upon them for life itself do not get enough to provide an adequate diet throughout the year.

But recently the urgency of increasing food production in Commonwealth and especially Empire territories has been realized, both for their own sakes and for that of the world at large. So here, in conclusion, we examine some of the ways in which, by planned action and scientific research, the Commonwealth and Empire's contribution to the world's food supplies is being expanded. We shall find that each of the great independent Dominions is engaged in this task, and that so, too, aided and guided by Britain, are the Colonies.

Food from the Commonwealth and Em

So far, in this story of Commonwealth and Empire food production, our ... has been given to the major food crops; and of these it has been po... include only the most important, on which millions of people rely. Most ... pouhoers, also, are quite well known in Europe, and appear in one form or an... our tables. Perhaps the greatest variation comes in fruit and vegetables, for the... on climate so closely. Many common green vegetables, like cabbage, lettuce or ... have been introduced into most parts of the world. Peas and beans, too, gro... many different climatic conditions. Tomatoes are not only found in the temper... but in the tropics also, in numerous parts of Africa, and in the West Indies; ... has a small but growing trade with Britain and Canada, and possesses a canning ... for processing tomatoes raised by small farmers.

Outstanding among the root crops is the potato. This grows throughout ... and the temperate areas; it is a large crop (nearly 650,000 tons) in Australia, ... Canada and New Zealand also. Malta formerly exported a small quantity and ... Cyprus sends several thousand tons overseas yearly. A comparatively recent deve... in this island is the export to Britain of seed potatoes and vegetable seeds. ... island exporting potatoes is Jersey, one of the Channel Islands. Her earlier spring ... her to supply a great part of the early new potatoes to the English market. In th... you will hear of the sweet potato being grown; but this is botanically a differ...

In passing from their country of origin to the country where they ... many products change considerably. Margarine bears little resemblance to ... palm nut or groundnut, and a bar of chocolate is far removed from the cocoa ... sugar cane. When you think of the wheat fields of Canada or the cattle ranches of ... or sugar be the million tons shipped all over the world, this is only one side of t... The object of all this vast industry which employs millions of people right a... simply that each single person may have on his plate the sort of meal to w... accustomed, and which he needs twice or three daily in order to carry out ... For each one of us, the vital thing is not foodstuffs in general, but the meal ... shall eat ourselves.

On the whole, men and women of every race and country require much the s... things from their meals. Protein for growth; starch or carbohydrates, ... sugar for energy; vitamins for protection against disease; lipoids and traces ... salts. The human body is constantly using these things, some more and faster th... but they must all be replaced up to a certain level if health is to be maintained. ... food is complete in itself, so that several types of food must always be eaten; e... has shown which groups are needed to supplement each other. But although th... needs of people are the same, the way in which they obtain these requirements ... very widely. Dinner in Africa, or London, or Fiji may look remarkably dif... the nutrient principles of each are, in fact, much the same.

The scientific study of food values is a new development and is st... incomplete. Nevertheless Man has always managed to feed himself, and has ... scientists have very successfully without knowing why. At the present ... finding that traditional foods and food customs of tropical peoples, which ... thought extraordinary and were called unsystematic, are, in fact, very well adap... conditions of life of the people concerned. Often, indeed, the introduction ... civilised foods has proved a disadvantage. But the scientific study of diet is ... necessary in times of shortage so as to make the best use of what is available ... to plan production to meet the future. And, generally speaking, the world ...

conditions for the African, far
n those of the bush-village and
anges in food, are gradually
shed in colonial territories
ia, copper mine workers have
ompounds (right) and modern
are replacing the traditional
ress hut (below).

food. Indeed, in some parts even of the Empire, the majority of the people have hardly enough to eat for subsistence.

Although people in Europe rely mainly on shops, most of the world does not depend on the shopkeeper for the food that has to produce it itself. Even in Britain, an industrial country with its population living in towns, many thousands of people produce part of their own food from gardens and allotments. But they do not have to depend on it. Particularly in the tropics, however, many million peasants live entirely on what they produce themselves, needing the market or shop only for luxuries and special items.

The routine of meals does not greatly vary in the countries which have a predominantly European population. An Englishman would recognize his breakfast, lunch and dinner in Canada or Australia; he might find that he had an unusual amount of meat and unaccustomed dishes—maple syrup in Canada, for example, or fresh tropical fruit in Australia—but the *kind* of meal would be the same. Nor, in fact, would his meals differ substantially even in the tropics, as long as there was a European community to support the life of the white man.

But outside these communities there are millions of citizens of the Commonwealth and Empire who live very differently. Some have copied European ways, others live much as they did before the white man came to their country. Most live as peasants, working on their own fields or jungle, exchanging perhaps with neighbours, but not, as the white man does, drawing upon the varied resources of other countries and climates. Because the area from which they are supplied is limited, they have developed a capacity for utilizing many plants and animals which are not generally regarded as suitable for food. In their own fields, too, they grow vegetables and fruits which are intended only for their own use. Some of these are strange and quite unknown in Europe, and would probably never be used at all if better were available. But to many an African, Indian or Malay the success or failure of his own strip of land is of more immediate importance

than the millions of acres of wheat or sugar or oil-bearing nuts that grow elsewhere this reason alone it is well worth our while to look round those Empire countries live differently to see what mealtime means to some of them.

In spite of the great variety of export crops which are raised in the Af colonies, the average peasant household relies in the main on a few staple foods growing by the family or village. But any attempt to speak of Africa as a whole is leading, since, not only are there many British colonies, but within them, even w the same area, there are many tribes. Each of these has its own traditions and custo and two of them living side by side—Masai and the Kikuyu in East Africa, instance—may belong to different groups be quite unlike each other. Some people in Nigeria or the Gold Coast, are well or ized; others are not. So when we speak African village or household it can be only of some, whilst there may be n others which do not conform to the pat At the same time, there are certain fac common to all. Whilst most of the people engaged in some form of agriculture, increasing number is employed in other w as labourers, railway workers, lorry dri machine operators, masons, clerks, teac and in skilled professions. As educ becomes more widespread and advance the number thus employed increases.

Usually the African wife plants and maintains her own vegetable garden. Here a Baganda woman of Uganda brings home plantains—a staple food—from her patch.

ALL these men earn wages. Since cannot at the same time follow employment and supply their own food, rely more and more on the market and shop. Moreover, as they have more mo they can afford more luxuries—such as su jam, tea and coffee—many of which are e manufactured or imported, and do not straight from the soil. In the towns, t fore, the traditional life and food are chan and taking on more of the uniform pa which we may find in other parts of world. Again, in certain areas, particu the mining districts of the Gold C Northern and Southern Rhodesia, large numbers of African workmen are empl together. They live in barracks or quarters provided for them by the company w employs them, and eat either in canteens or from rations which are issued to the their employers. In such areas, too, the way of life differs from that of the village l lands.

But in general, the African prefers to grow his own foodstuffs wherever h and use them fresh. Even in the towns people try to have a vegetable plot and t man cannot spend much time on it, his wife often will. From the earliest times he has

t Africa, as in other parts of that continent, food is prepared by the womenfolk. Here maize is ground into flour on the pestle and mortar principle. Yam, cassava, potato and plantain are pounded into a mash in similar fashion before being shaped into a kind of dumpling.

Workers at a sisal factory in Tanganyika receive their "rations" in mess tins and eat seated at a table in European fashion. Such changes from centuries old custom have had a far-reaching influence on the nature of the food itself.

accustomed to live simply on what he, with his wife and children, can grow on a small patch of land without the aid of expensive machinery or equipment. Before the days of easy travel it was necessary to live on what the immediate neighbourhood could provide, and even today most of the people still do so. There is, however, one absolute necessity which *must* be purchased—salt. In a tropical climate salt is not only a condiment, it is a physical necessity, and a man will consume as much as 4 oz. per week. Consequently, even in remote times there was a salt trade throughout Africa, and money or goods with which to obtain it had to be produced over and above the needs of the day.

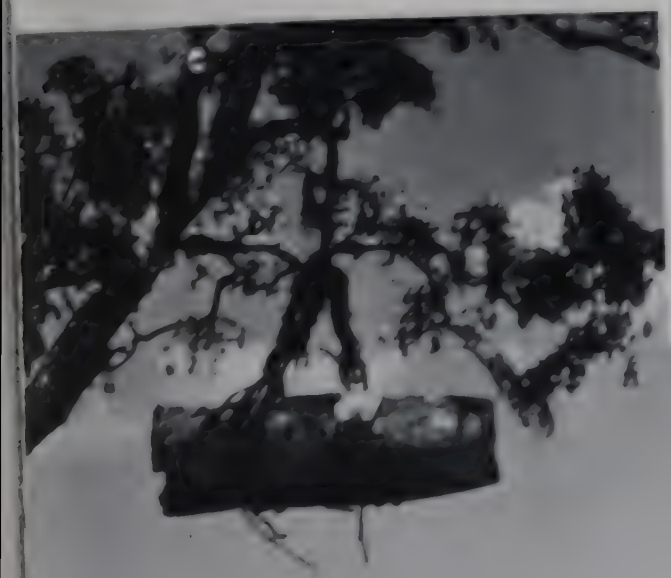
No African village is complete without its vegetable gardens and fields which should yield enough to allow the women to trade in a nearby market. Food is essentially the women's province. It is the duty of an African wife not only to cook, but to keep her family supplied with vegetables. The menfolk are responsible for the principal crops, especially for the planting, but much of the agricultural work is done by women.

When possible, the woman will plant her own garden near to the home so that she can attend to it at odd moments and can have her vegetables ready to hand. She will plant peas, beans, spinach, onions, marrows, okra, tomatoes, and various other annual vegetables. All these will be used in the soup; all are familiar to us save perhaps okra, a West African type of edible hibiscus that produces a seed pod like a small green carrot, two to three inches long. It is soft and sticky, and is a great favourite for thickening soups; it can be dried and ground to powder for sale in the market as a thickener. All these are women's plants. But farther afield in the bush, the men will have made a large clearing by cutting the trees and undergrowth and burning them. This is village land and each family has the use of a strip. They cultivate it with a wooden hoe, shaped and then hardened in the fire. This is a crude tool and laborious to handle but it is suited to tropical soils which neither need nor are improved by deep digging.

THE family field-strip will be used to grow the staple foods which form the bulk of the people's meals, and which must be produced in quantity so that they may be stored during the year. What this food may be depends on the soil and the climate; in some places maize or millet; elsewhere potatoes, both the starchy and the sweet, plantains, or yams, or cassava. Where root crops are grown, room is provided between the rows for a further crop of vegetables or groundnuts, sowed and tended by the women. These are their property and they will probably trade part of them in the market.

Yams and cassava are local crops, eaten by the folk who grow them. In some areas they are as important to the African as loaves of bread are to the European.

d they serve much the same
rpose. The yam is a giant tuber
ich may grow up to two feet long
d weigh ten pounds though there
many varieties all differing in colour,
e and, to the experienced taste,
vour. It is an annual plant, sown from



How Nigerians make their own sugar—juice crushed from the cane is heated in a primitive "oven"; when cool, it sets into brown cakes. In Uganda, honey is obtained by hanging up a hollowed-out tree trunk (*left*) in which wild bees start a colony.

eed on carefully prepared mounds. Above ground it produces a vinelike foliage which is trained upwards on tall poles eight feet high; below ground the tubers mature after four to five months. Both its cultivation and harvesting entail a good deal of work, and to be a successful yam-grower is the mark of a sound farmer. By tradition the yam is a man's plant, and it would be asking for trouble if it were planted by a woman, though she is permitted to dig it. After the yam harvest, a grain crop such as

illet can be successfully grown for the following season. The yam is a good starchy fling food. It can easily be stored, so that with a good supply the farmer need not go ungry between crops. Village barns are built for storage and if these are large and well stocked, maybe with hundreds or even thousands, it is a sign of good living and a well-organized community. Yams also make an admirable gift—especially since they vary so much in size that the gift can be carefully graduated. A generous chief may allow the poor to help themselves from his stock. But to steal even a single yam is reckoned one of the gravest and most contemptible of crimes.

In colonial territories—notably in East Africa—where cattle are reared, the white man's m
being introduced. Dairy farming in Uganda, for example, has been much improved by the i
of animals with European strains, and the demand for meat and milk is increasi

Cassava is also a root or tuber, easier to grow but, perhaps for that re
processed. It is planted year by year from cuttings and so does not call for
economy as the yam, whose seed must be purchased or carefully saved. C
generally dug fresh for use, but there are two varieties of which the large-
allow to mature but can be left in the ground for a year or more without damage
is also sliced and dried for storage.

With this type of individual farming, one of the greatest problems is
keep the food supply constant throughout the year. For several month
little or nothing to be harvested; therefore it is particularly important to pre
of the kinds of food—yam and yams particularly—which can be stored. In
Nigeria, where grain is the staple, it is stored in clay huts very like those in
people live, except that the only opening is a clay lid at the top. The peasant
as well fed during the off-season months as during the harvest period, and
times he was very likely to starve.

The African expects three meals a day, the evening meal generally
heaviest. Dinner is to a well-to-do person: Fufu the main basis, Oji the stew
the names to him, the language of a Nigerian tribe). Fufu is mainly starch, u
cassava, the yams and, incidentally, the potatoes and plantains. The stew, in
be fairly expensive as a dish of mashed potatoes and gravy.

...w Fufu and Oto are Prepared

...s always vegetable. It may be yam, potato, cassava, plantain or a mixture ...re peeled and boiled till soft. They are then placed in a wooden bowl—a ...p bowl, often made from a length of hollowed tree trunk—and pounded until the whole is mashed into the consistency of dough. This is heavy ...done by the womenfolk, standing and swinging downwards from the high ...right on the pestle. If it is yam for dinner, boys may be asked to help, for ...man's crop and he does not lose dignity thereby; but menfolk would not ...s. Meanwhile a sauce is prepared—green vegetables, beans and peas, ...ums, onions, edible leaves (including some from trees), okra, red peppers, and dried fish if the latter is to be had and, most important of all, as a basis, groundnut oil. All these are only some of the possibilities, for there are ...ds of fruits, vegetables and leaves which are all eaten in one district or ... are cooked together, the toughest first and the others added later; Almost ...ce into which everything goes. The fufu is moulded up into a pudding, ...on one side. The household gathers round. In the absence of plates, the ... from the pot; in the absence of cutlery, fingers serve. Each takes a portion ... it into a ball, and with it soaks up as much of the rich oily sauce as it will ... pushes it into his mouth. But there is a code of manners hardly less exacting ... a European dinner table; food is taken only with the right hand, it must ...ed, and there must be no waste of gravy.

...e maize or millet is grown, the grain is pounded into flour by the women,

...ers by river and lake, fish is a much sought after food and many ingenious devices are ... to catch it. This trap in Lake Victoria takes the form of a flexible wall of reeds which ... wards so that the fish may eventually be scooped out with the basket seen on the right.

using pestles and stone mortars, and the meal boiled with water to make what can be be described as porridge. This is the staple food of many tribes, particularly in t Southern Sudan, Northern Nigeria, Northern Rhodesia, Tanganyika and parts of Ugand It takes the place of the fufu dish already described. To a European taste, yam pudd is not exciting, but this porridge is particularly monotonous. In Sierra Leone loca grown rice is common as the main dish, and all over the West Coast rice cooked in t manner of the Jollof tribe is considered a delicacy, partly no doubt because it takes ov a couple of hours to prepare.

Beer and Palm Wine are the African Drink

The African has two native drinks, beer and palm wine. Beer is brewed fr sprouted millet or plantains, and is the drink of East and Central Africa and of t grain-growing areas of the South, such as Basutoland. A man's beer should be bitte sweet beer is fit only for women. This beer is more than a mere pleasure drink; it i

Cassava is one of the staple foods of the West Indian colonies. In British Guiana (*left*) the t are scraped before cooking. In British Honduras (*right*) a heavy woman sits on a crude press to sq out the juice so that the cassava can be made into bread.

valuable item of diet which supplies yeast and similar beneficial bacteria. In the oil p areas of West Africa palm wine is drunk. The trees are tapped—the bark being and the sap allowed to run into a cup or gourd—three times daily—in the early morn mid-afternoon and at dusk. The good tapper works with clock-like regularity. It task which by long custom may be done by men only, although the juice is drunk by men and women. It is greyish-white and only mildly intoxicating, and it will not k long as it rapidly changes into the form of vinegar. But if it is fermented it becom really strong drink for men.

Beer or palm wine is the necessary accompaniment to any social gathering is the mark of hospitality and good-fellowship. The African is fond of conversation company. Not only do the important occasions of life—birth, marriage and dea call for a celebration, but the members of the various societies of men and women

to entertain each guest. Kola nuts have an almost ritual significance offered to a guest, and a bargain is by the breaking of a kola nut to be by both parties. The West African a special little ornamental bag, like 's hand bag, in which the kola nuts arried. The Yoruba of Nigeria have verb—"Anger draweth arrows from quiver, good words draw kolas from ag."

social gatherings—and at odd times in place of a meal—various tuber dishes may be eaten. Beancurd, ed groundnuts, roasted grain, wild from the forest, nuts (particularly the , edible seeds such as benniseed or im (sesame) which supply fats and oil, pieces of sugar cane which are cut into

tional "dish" of British Honduras is the *tilla*, a Spanish word meaning little cake. It in fact, a thin cake made of maize flour and baked on a hot, iron plate.

In the Cayman Islands, the deep-sea green turtle is kept in crawls—stockade-like enclosures sunk into the waters of shallow lagoons. Many are exported to the U.S.A.

lengths and chewed. The sap of this is pleasant and sweet, and small patches are often grown only for sucking raw. In addition, various minerals and edible earths are consumed to supply the necessary mineral salts, including calcium, which would otherwise be lacking. Experience has shown the African people that such things are needed from time to time to maintain the body's vigour, and here tribal custom and tradition play a part no less valuable because not fully understood. In the same way special plants, seeds and leaves are eaten in ill health or at certain periods of life, as, for instance, by women before their children are born.

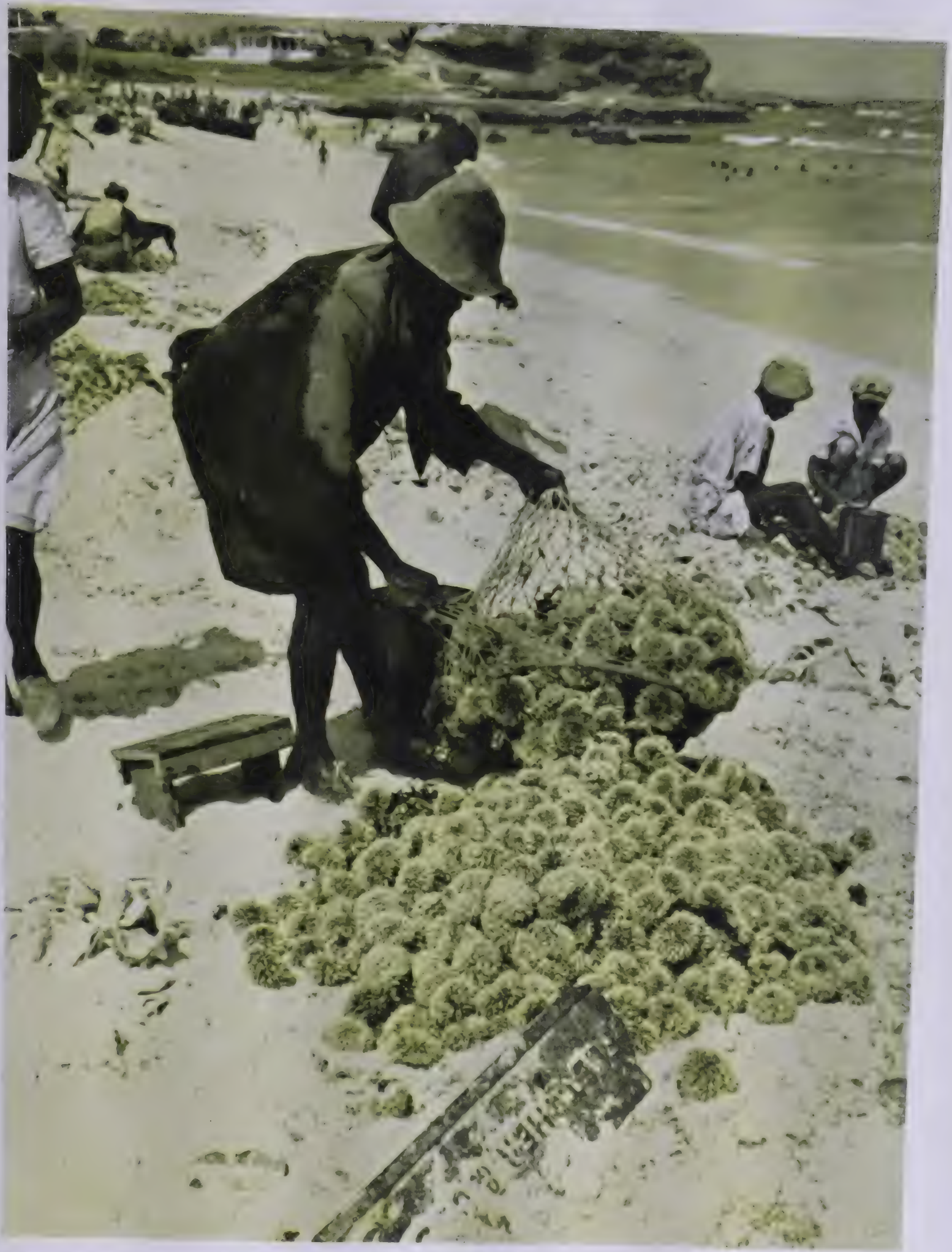
But there are other and stranger delicacies. In many regions swarms of locusts may devastate whole areas of growing crops and leave a countryside barren in a few hours—but the locusts themselves are eagerly caught and fried. Incidentally, they have a

Arrowroot, most important crop on St. Vincent, is grown both for home use and for export. Over 1½ million lbs. were sent to Britain in 1949. Here students from the Imperial College of Tropical Agriculture in Trinidad are paying a visit of inspection to one of the plantations on the island.

high protein content and while they last are a good substitute for meat. Fried grasshoppers are something of a luxury. In Uganda, at certain seasons, swarms of tiny flies rise from the lakes so thickly that they look like smoke. These are pressed into cakes and fried. Oddest of all is the capture of termites or white ants which build a giant ant-hill several feet high. If a native finds such a hill in the bush he can stake a claim on it by marking it. At the right time, that is when the ants are fully grown with wings and just ready to fly out, he covers the mound with a blanket or piece of cloth, and taps it vigorously. The ants fly out in alarm and are caught in the blanket from which the women and girls pick them off by the wings as fast as they can, eating the bodies and discarding the rest.

THE extraordinary variety of living things which the African will eat suggests at once three things. So far from having an assured food supply, it has for generations been a problem of the utmost urgency to find enough to last from one harvest to the next. Then the staple food, whether grain porridge or pounded yams or cassava, lacks variety. Finally, their regular diet lacks protein in the form of meat or fish in adequate quantities.

Early travellers were astonished at the African's avidity for meat when they slaughtered big game, particularly the biggest of all, elephant. Even in earlier days when wild game was plentiful and unprotected by law, the Africans could never kill with sufficient regularity to ensure a proper supply, nor of course could they preserve the meat for any length of time even if there was a surplus. In modern times close settlement and cultivation have driven away the animals of the forest. Into the stewpot, therefore,



Emptying sea-eggs out of the hooped nets in which they are brought up by divers from submerged reefs off Barbados. The roes of these eggs are a popular dish in the island and taste very much like hen's eggs. They provide the local fishermen with a living in the hurricane season which prevents normal fishing.

[illegible] wild pig, baboon or monkey only when a man is lucky, or goat or [illegible] bought in the market if a man has earned money by working or trading. F[illegible] in a rather haphazard fashion and will be killed for the pot only on some spe[illegible] Those people who live by rivers, or by the lakes of Central and East Africa, can [illegible] their diet with fish, and a few tribes eat little else. Dried stockfish from [illegible] on the Central African Lakes is available, but this costs money. In gener[illegible] natives of the bush and forest need to take every opportunity that offers—[illegible] locusts, caterpillars or ants—to supplement their ration of protein.

TWO great and well-known tribes follow an entirely different way of li[illegible] the Masai of East Africa and the Fulani of Nigeria. Both are herdsmen [illegible] and for their cattle which are their life and their wealth. As an index of pr[illegible] important to keep up the numbers of their herds, which may run into thousa[illegible] therefore, of slaughtering for meat, the Masai have developed a method of d[illegible] from the living animal. This can be done at intervals without damage [illegible] The blood is prepared in a special way, cooked and eaten, and milk also [illegible] part of their diet. The Masai, in particular, are strikingly well develope[illegible] half a foot above their vegetarian neighbours the Kikuyu.

The African whose meals have been described is the peasant cultivato[illegible] living in the traditional style as his fathers lived before him, in villages [illegible] forest, or leading a semi-nomad's life with his cattle. But if he earns money [illegible] for another—by the sale of cocoa or palm oil, by work in a company's plan[illegible] regular employment as a wage earner—so he will be able to afford more va[illegible] more of what were formerly luxuries. If again he has been educated, partic[illegible] employed as a clerk or professional man in a town, he will probably live m[illegible] European style according to his income.

IF he does this, will he be better or worse fed? There is no really straightforw[illegible] European meals are more varied and better balanced; they include [illegible] milk and eggs, and less starch. But, since they call for greater dependence [illegible] they mean spending much more money. Thus the lower-paid Africans [illegible] be able to afford a sound and balanced diet even though it is available. On th[illegible] many of their traditional foods have been found, on analysis, to be excep[illegible] food values, while the European use of white flour, polished rice and [illegible] definite disadvantages. The African habit of using vegetables fresh fro[illegible] and of trying to grow such vegetables wherever possible, even in tow[illegible] scientifically. Against this, many tribes do not use what they have as fully [illegible] often for no better reason than sheer conservatism. Some dislike milk and [illegible] some keep chickens and will not eat either them or their eggs. On bala[illegible] sum up by saying that whilst a great many Africans have adopted Euro[illegible] products, many Europeans on the West Coast would not be without "grou[illegible] or "palm oil chop."

What has been said about the African adopting European wa[illegible] particular force in the islands of the West Indies. Here the original inh[illegible] [illegible]

What the West Indians Eat

They have brought with them many African ways, but they have been their traditional life for generations so that we must not expect to find an spread with jungle fare. What we should find, unhappily, is that many ople had very little dinner to spread at all.

umber of the smaller West Indian islands are not very productive, whilst ones have a higher population than the land can well support. The extensive to plantation crops—sugar, bananas, cocoa, coffee—limit the arable ilable for growing food for the inhabitants themselves. On the other coconuts and citrus fruit (limes and oranges) are plentiful, and afford and vitamins. Wheat bread is general, and rice, maize, yams, cassava are raised for local use. There is abundance of tropical fruits such as and guava; vegetables like tomatoes, pumpkins, beans and peas, , okra, and callaloo (spinach) are grown.

Tea and coffee are generally used, but locally grown cocoa is a staple drink and is very nourishing. Although sometimes the plentiful supply of sugar, both in the form of cane juice and molasses, is a great asset to the everyday diet.

By the sea, and here the smaller islands have the advantage, enough fish can be caught to make up for the lack of meat. Among the fish regularly taken are flying fish, snapper, grouper and mullet. In Trinidad also the fresh-water cascadura is available. Both sea and land crabs are freely eaten; on some islands edible frogs and lizards (a kind of iguana) are popular, and in Trinidad the agouti (not unlike a squirrel) goes into the pot, as does the armadillo in British Honduras. Barbados has a special liking for sea urchins, or sea eggs as they are called. These have a spiny covering which is split open and the meat extracted. Shaft or scrawny rock are then cooked in a shell and seasoned for about an hour. This makes an attractive dish but is expensive, and costs very a few pence. Shellfish also are gathered in season, and of some of the former kinds

the Deccan grinding millet with a primitive their home of bamboo matting. Their life is often they are underfed and ill-nourished

Many of the ingredients for his curry are obtained by the Indian at the local market. Here at Secunderabad—garlic, ginger and turmeric may be seen among those laid out for sale. The inverted baskets on the right furnish the vendors with shelter from the sun.

wine is made in several Commonwealth and Empire countries. Both South Africa a
export it, as does Cyprus. These noble grapes were grown in Pearl country in C
where vines have been cultivated for over 250 years.

n raw with lime juice, pepper and onion, is a staple dish.
Islands of the West Indies grow arrowroot, a tuber which, like cassava,
, but which if carefully prepared produces the most digestible form of
known. It is consumed locally, and also exported (principally by Br
pure form for use as a medicinal diet.

all know Indian curry powder—and with that you will know how the
Indian dishes. His normal two meals a day, as mid-morning and at evening,
and rice, or curry and chupatties, for most of his days. Six-sevenths of the
villages of less than 5,000 inhabitants, and most of these depend on their
or a living. Even so, India relies on the import of rice from Burma and
to supply her people, and the standard of nutrition is low. Rice itself is
e food, though in the form of paddy (that is, with the outer skin of the
it conserves many vitamins which are lost when the skin is removed and the
d. But for commercial purposes, and for export, polished rice is more

ttis are thin, lightly baked pancakes of unleavened flour, either wheat or
flour is mixed with water to form dough, rolled and flattened between the
hands and then baked on the spot. Curry as used by the Indian peasants is
grinding spices in a mortar or on a flat stone, some of the principal ingre-
pepper, ginger, turmeric, and various edible leaves and herbs. These are
y for flavouring, but for their considerable food value and the mineral salts
ontain. Into the curry go beans and peas, green vegetables, and whatever
able—but the Hindu will not eat beef in any form, whilst the Muslim is not
touch pork or any pig product. Ghee is widely used, and mutton or the
chickens are excellent for currying if they can be had. But, in general, the
an's consumption of meat in any form, and of secondary foods, including
too small.

DNUTS are being increasingly grown locally, and their inclusion in the diet
strongly advocated by advisers on nutrition. Lentils are extensively grown,
ed. The commonest form of fat is ghee—clarified butter often made from
. Curds and soured milk (yoghourt) are also eaten. The sugar cane is much
rmers; if only in small quantity, it will probably be cut into lengths and the
ked. If the farmer has a larger plot, the cane will be crushed in hand mills
own in open pans to form a brown candy called gur. Sweetmeats and sweet
d in the bazaars and are provided for feasts and special occasions but, of
cost money. Tea is drunk at any time, heavily sweetened. Fruit drinks and
popular, particularly with Muslims, who may not drink intoxicants. Young
the coconut is a valuable addition to the diet, and in some parts is almost
d. Fish, too, are caught locally, the best, a type of large mackerel, being
nd the cheaper. Where fish are eaten, the people show a marked physical
r. In certain areas dates are plentiful; they have a high sugar content and
rtant food. The crown of the date palm can be bled, like the coconut palm,
called toddy, and is a common drink. Occasionally it is boiled down to make
.

Indian peasant labours under many disadvantages. His cultivable land is
pulated, and the soil has been exhausted from centuries of cropping without
ourishment being replaced. He is hidebound by traditions, tolerant to an

Middlemen bargaining for fish at the quayside at Kuala Trengganu on the east coast of Malaya. Here, where the population is predominantly Malay, fish is a food of first importance and the catching of it remains the leading industry.

compulsion, to employ these things in the right way. Both the Government scientists of India and Pakistan are striving to tackle the problem, but ultima is the peasant himself who will decide whether the masses of the people stay a are, or the level of their food supply is to be raised to the standards proj great Commonwealth confreres.

Importance of Fish and Rice in Malay

The Malay peninsula has seen many waves of invaders. There are, accor not one but several peoples and cultures, with little connection between the Malay and the primitive Sakai of the jungle. But the Malay is himself an invader, b from the North customs of Indian origin and the Muslim religion. Then within century many Europeans have come to live in the country, and the Chinese als settled there in large numbers. So today Malaya presents a triangular culture— Chinese and British

The Malay fisherman of agricultural Malaya are equipped with the blow-gun with which they kill forest animals for food. Meats are cooked at the communal fires where they often live [illegible]

[illegible]—a great fisherman. His boats are sharply [illegible] with high prow and stern, gaily painted in bright colours and often elaborately carved [illegible] facing p. 65). They are rigged with a square sail. The fishing is inshore, for [illegible] are small and the men unwilling to spend days and nights at sea. Instead, they [illegible] have ingenious fish traps with avenues of bamboo stakes leading the fish [illegible] ular enclosures from which they cannot escape, and where they can be easily [illegible] or speared. These traps can be constructed only in shallow water, and [illegible] into them calls for great skill. The catch is varied; cuttle, shark and mackerel [illegible] the larger fish, and pilchards, sprats and anchovy among the small fry, are caught [illegible] sea-pike, squid and many more are caught on the line. Once [illegible]

become the subject of intense haggling. Most of the catch is disposed of on the be to housewives, small traders and agents. Bargaining is keen, at so many "tails" Malay dollar. Even children learn to buy and sell fish and make a good barg Much of the fish is bought by merchants, either to be dried and salted, or to pound with salt into a crude fish paste. Both are traded inland at a considerable profit.

Fish in one form or another enters largely into the diet of both Malays Chinese. But so many people are employed on the estates for money wages that the num of those who purchase their food instead of growing it is rising rapidly. The commerc ability of the Chinese has increased this tendency. Thus European styles are repla the old ways—as in the wider use of bread, tea and coffee, jam, and tinned goods. F for the Malay and the Chinese, however, rice remains the indispensable dish.

DEEP in the valleys between the forest-covered hills of the interior, live the Sakai their small settlements they practise agriculture on the "shifting cultivati principle, clearing and burning a patch, and digging it with a pointed stick. Rice, millet cassava are planted, and probably sweet potatoes and bananas the second year; but three or four years the jungle will have invaded the clearing and it will be abandoned. the Sakai's main larder is the forest, their principal resource the bamboo. From it they b their houses, make cooking vessels and waterpots, and the equivalent of pots and p kettles, bottles and jars.

But perhaps most important of all, it furnishes the deadly blow-gun. consists of a slender tube, built up of sections and polished inside—the "bore"—w is fitted inside a wider "barrel" for protection and given a mouthpiece. The dart thin strip of the rib of a palm leaf, one end being fitted with a pith wad, the other poi and tipped with a deadly vegetable poison—the boiled down sap of the Upas The dart is blown with a sharp expulsion of breath on the same principle as an air Monkeys, deer, wild pig and even tiger fall to these lethal weapons which can be with great accuracy at short range, and are silent. The poison kills after a few min and once the flesh round the wound is cut away, the meat is undamaged.

Primitive as the Sakai are, they are well-off compared to the shy Pygmies. T are an old, but dying race, here and in Africa, estimated at but 2,000 in all Malaya. T life is one with the animals of the jungle—cultivation is hardly practised for they r stay long enough in one place to sow and reap a harvest. The women dig forest r such as fern, and gather wild fruit with a bamboo pole, or collect grubs, snakes, and the like. The men use a crude bow and arrow or a blow-gun copied from the S to kill squirrels, monkeys or forest deer. The meat is roasted over a fire, the roots b in the ashes, whilst rice is boiled in bamboo tubes stood beside the fire.

Plentiful Resources of the Pacific Islan

On many of the Pacific islands the people live very much as they did before coming of the European, save only that the constant warfare and slaughter between village and another is no longer possible. The islanders are blessed with two unfa assets, the coconut palm and the sea. In addition they have plantains, breadfruit, chestnuts, durians, pawpaws and other fruit growing wild. In the gardens ca grown taro, manioc, sweet potato and bananas. In the streams are prawns and shel on the shores turtle. Inland wild pig, and occasionally wild cow, can be hunted, w tree lizards, flying foxes and land crabs are caught and eaten. At certain season coconut crab, a fierce-looking creature that can climb the palms, tear down the

Plant foods of the Pacific. 1. Young sago palms: the pith obtained from inside the trunk of the fully grown tree furnishes a nutritious, starchy cooking material. 2. Despite its prickly rind and offensive smell, the juicy interior of the durian has a pleasant taste. 3. Planting taro in Fiji. It can be seen is raised in well-irrigated soil.

and crack them with its vice like claws, migrates in hordes from inland to the sea. These, fat with coconut flesh, are captured and roasted.

Taro is a root not unlike a large potato and is the commonest vegetable grown. The spear shaped leaves can be boiled and eaten, but the tuber, pink or purple in colour with white flesh, is the chief harvest. Taro requires more water than yam, and is cultivated in beds made swampy by irrigation, known as taro ponds. It can also be grown in dry gardens, by planting in holes kept well watered. As in Africa, the yam is popular, although it ranks second to taro. Pacific yams often reach a great size. In many places a large, coarse variety grows wild, but to be reduced to digging wild yams is a sign of poverty and inability to manage one's affairs properly.

MANIOC is a type of cassava, the root of a shrub-like plant which grows both wild and cultivated. It is poisonous in its raw state, and must be soaked and well cooked before it can be eaten. Often it is prepared as tapioca. A similar starchy pudding material which we obtain from the Pacific is sago. This, however, is the pulp of a palm tree nearly as high as the coconut palm, but thicker. When the tall trunk has grown, it flowers, bearing large nuts of great hardness; but once it has borne fruit the palm dies. If just before flowering the tree be cut and the trunk split, it will be found full of pulp. This is scooped out, pounded, washed and strained, when it becomes easily digestible starch. One palm will yield 600 pounds of sago which would more than satisfy a man for a whole year. Sago is a staple food in New Guinea and it can be dried, baked and kept for long periods. It is exported from Malaya and Sarawak.

Native meals consist of a large mound or pudding of cooked starchy vegetable enlivened with a rich sauce. The pudding may be yam, manioc, sweet potato, breadfruit, or green bananas or plantains, the latter being regarded as the poor man's dish. The pudding may be sweetened by the addition of crushed almonds. One method is to mash the vegetables and wrap the dough in leaves, then bake them in an oven of hot stones covered with earth. Baked puddings are preferred to the less troublesome ones boiled in pots. The sauce is on a base of coconut cream squeezed from the fresh ripe pulp, with taro leaves, fish, prawns, beans, egg plant, nuts and pork broth if available stewed together. When both are ready, the pudding is served on banana leaves, a hole is scooped in it and the sauce poured in. The correct procedure is to take your morsel, with the fingers of course, so that the sauce runs down and, as the pudding diminishes, it becomes saturated with the gravy.

One of the methods employed by Pacific islanders to cook their food is to wrap it in a covering of leaves and bake it in an oven of hot stones or a pit of hot ashes. Here a Fijian is completing the first part of this treatment to a young shark

e preparation of
e South Seas drink
own as kava is
ended by elabor-
e ceremony. It is
ade from yangona
ots pounded to a
ste. In Fiji, where
lly men take part
the ritual, this
ste is placed in a
cial bowl with
ater and kneaded
ght), the resulting
quid being strained
equently before it
is ready.

In the larger islands fruit is varied and profuse. It does not form part of the egular feast, but is eaten as "light refreshment." One of the favourites is the durian, large fruit with a spiked case, filled with evil-smelling but luscious pulp. Guavas, angos, wild plums and citrus fruit all help to supply vitamins and sugar. The coconut, well as providing the coconut cream in daily use, can be turned to many purposes. he sweet jelly of the unripe nut is eaten by children; later on the nut may yield a uart of rich cool milk, so that a drink may be had anywhere at any time. The ripe esh is grated, pounded, roasted or boiled. From its flower shoots toddy is collected; he shoot is bent over into a cup and the end shaved off morning and evening. The p that flows in quantity is rich in sugar; it can be drunk fresh, or allowed to ferment o that the sugar turns to alcohol and the resulting drink is intoxicating. But this must e drunk soon, or the alcohol may turn to vinegar.

Social Significance of the Pacific Pig

Although everyone keeps pigs, the native does not get a regular diet of meat. igs are for display, a mark of social distinction. Moreover, the worth of a pig is assessed ot by its weight or its value as pork, but by the elegance of its tusks which are encouraged o grow and are trained into fantastic spirals. The islanders have few cares, and the ascinating hobby of pig-keeping and tusk-training provides competition and interest. But the odd thing is that a man is judged not so much by the number of fine pigs he ossesses as by the number he *kills*. Generally speaking the Pacific islanders are a ospitable people and value a man by the feasts he gives. Thus the leader, the wealthiest an, is he who in his lifetime has slaughtered the greatest number of well-tusked pigs r his neighbours' benefit.

Those who have lived with the islanders have described these feasts. For days or even weeks beforehand the host is engaged in assembling his pigs and collecting taro, or a small feast with maybe one hundred and fifty guests, ten or twenty pigs and a few thousand roots of taro will serve; but really notable feasts are spoken of when 300 pigs and 20,000 taro were consumed. The giving of such a "banquet" puts a man on the highest social rung among the islanders and as a memory of feasts that have been given, the skulls and tusks of the pigs are preserved and hung in the feast-giver's

A T this re
in Tong
May 1958 re
the 36th bi
Queen Salo
tables were
over 200 ro
roasted wi
sucking pig
by lobsters,
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pudding.
long shelter
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was simila
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after the
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lous fami
(be

ricate Ritual of the Kava Ceremony

collection in the case of an old man who has done well may reach enormous

Harry Luke, a former High Commissioner for the Western Pacific, has recorded
ount of a feast given in his honour by the Queen of Tonga in 1938.
We all sat on the ground, on mats, and we ate with our fingers. In front of each group
was an enormous tray, perhaps six feet long and three feet wide, made of branches
na leaves and solidly packed with food. The pièces de résistance were pigs—pigs of all
s and shapes, spitted and roasted whole over pits dug in the ground and lined with
stones . . . . There must have been about 200 guests, and it almost seemed as if there
pigs. Then there were turkeys steamed in banana leaves, chickens cooked in coconut
cuttlefish and crabs caught
ping, mussels tastefully
on narrow little
made of the ribs of
f. Any loopholes on
were blocked with
s of the country, balls
y and glutinous sub-
olled up in leaves.
f tree yam, white and
took the place of bread,
t had a little salt
leaf, its edges daintily
. After the banquet our
ere washed [and] before
nded it] in a wooden
one of the Queen's
ttle Tongan Maids of
"*

Women and children of the island of New Britain (which comes within the Trust Territory of New Guinea administered by Australia) return from a river with containers of water accompanied by their pig. In the South Seas this animal is as much a mark of social position as a source of food.

Courtesy of the Government of Australia

h ceremonial occa-
the drink is kava.
pared from the root
es of wild pepper
its making is a ritual.
are washed and
y a paste which is
h water. In the old
root was chewed to
paste, but nowa-
y be beaten to pulp
hollow stone. On
s the task is done by young girls, but in Fiji only men may take part. The
emands three principal celebrants—the mixer, his assistant and the cup-bearer.
s put into a ceremonial bowl and water is poured in by the mixer who kneads
the brew. Meanwhile a ritual chorus is chanted by the elders. As the mixing
the liquid is strained several times through a mesh of hibiscus fibres, the mixer
the used strainer to his assistant who washes it, throwing back a clean one.
kava is ready, the mixer claps his hands. All clap hands. The cup-bearer fills a
olished coconut shell ; all the guests have a small individual bowl ready. The
r first fills the bowl of the chief guest, or of the highest dignitary present, who
st. In some parts, it is correct first to scatter a few drops on the floor as an
o the gods ; in Fiji the chief guest should, after drinking, spin his bowl across

* "From a South Sea Diary" by Sir Harry Luke ; publishers Nicholson & Watson Ltd.

the floor. Then the rest drink. Speech-making follows. All feel at peace with the world, for the making and drinking of kava is a sign of peace and friendship.

Although few parts of the Pacific islands are far from the sea, only those living by the shore can fish regularly, for the jungle does not encourage rapid movement from place to place. It happens also that the villages on the shores are often so crowded that the people have no room for gardens. Thus a regular trade has grown up whereby the dwellers inland grow yams, taro and other vegetables in excess of their requirements in order to barter them for the turtle and fish which are caught on the shores. The natives are very clever at spearing fish in the shallow lagoons, but more exciting is the fish drive. This has to be organized since many people take part. They wade quietly and gently into the shallow water, forming a large circle. Some have flat boards, some have nets. At a given signal all yell, splash and beat the water with their boards. The fish, terrified by the din and commotion, come to the surface, leap out of the water and are caught in hundreds by the net-men. It is a scene of wild excitement, both of fish and men, very unlike quiet angling by an English stream.

Among the projects sponsored by Britain's Colonial Deve[lop]ment Corporation is the development of fisheries in the S[ey]chelles, in particular the catching of sharks for their vitamin and skins. Here is one of the specially equipped vessels converted from a minesweeper—commissioned for this wo[rk]

BUT the native can be quiet, also, when he trails a line from his canoe over calm waters, baited for octopus or bonito. He is quiet, too, when he uses the throw net. This is for small fish, and is a fine-meshed circle of net with the rim weighted with sinkers all round and a cord at the centre. The fisherman goes softly and slowly, and throws the net so that it spreads full out upon the water, when the sinkers fall, and as he draws it slowly towards him by the cord fastened to the centre, the net closes. Or he may go for flying fish by night, using a torch to attract them so that they fly blindly into waiting nets. Strong young men catch turtle by diving upon them in the shallows, holding their forelegs and head with its sharp horny beak, and bringing them to the surface. In these operations in shallow water there are dangerous as well as wholesome fish; the scorpion fish with long spikes, the stingray with venomous tail, or the stone fish, barely visible among the coral in which it lurks, with spines so poisonous that they can kill. Even the giant clam, embedded in the coral, may drown a man unlucky enough to be caught by the foot in its closing shell, but if it can be prised open there is plenty of good meat inside.

The coral lagoons of the Pacific are the home of one of the most curious

ers lined up in readiness for the greatest mass harvesting ever carried out in Australia—the first of sorghum from the Peak Downs farm which is run jointly by the Queensland Government and the British Overseas Food Corporation. (See also illustration on page 20.)

Courtesy of the Government of Australia

in the world. Deep in the recesses of the coral there is a worm, Bololo (or Palolo), green, some nine inches long. Once a year, on some dawn in the last quarter of the ber moon, all the Bololo will rise at once until the surface of the sea is a tangled ming mass of myriads of worms. It is the end of their life cycle; they rise to lay eggs, but after a couple of hours they literally melt in the sun and dissolve in the But not if the natives have judged the day of their rising correctly, whether by owing the advice of wise old chiefs or by constant watch. Then the canoes are out as Bololo covers the sea it is scooped up to make a rich but transient breakfast once a Cooked Bololo has been described as not unlike spinach flavoured with oysters.

he U.N. Food & Agriculture Organization

Food was one of the first subjects to receive the attention of the United Nations. n before the United Nations organization was formed in San Francisco in 1945, entatives of several nations had met together in 1943 at Hot Springs in the United s of America and drawn up plans for co-ordinating world food supplies and outing them fairly to the free and liberated countries after the war; and the body rged with the duty of carrying out these plans, the Food and Agriculture Organiza- was the first of the permanent international organizations of the United Nations come into being. It was born at Quebec in Canada in October 1945, and a leading re in its creation was Sir John Boyd-Orr (later created Lord Boyd-Orr), the British ert in nutrition, who was chosen the first director-general of the F.A.O., serving in capacity from 1945 until 1948.

The objects of the F.A.O. are to procure and arrange all the information possible out the food supplies and the food needs of member countries; to help in sharing ilable supplies fairly; and to advise members on crops to be planted, ways of

...ning Increased Food Production

...ars ago Lord Lugard, one of the creators of Britain's Colonial empire ...n of tropical Africa: "On the one hand, the developing wealth of the ... of the earth must be developed for the benefit of mankind in general; ...n obligation rests on the Controlling Power, not only to safeguard the ...of the natives but to promote their moral and educational progress." ... these words we can better understand the purpose of two British Acts ...which immediately concern us—the Colonial Welfare and Development ...d the Overseas Resources Development Act of 1948.

...as an enlargement of an earlier Act which was never fully in operation ...he war of 1939-45. By it, 120 million pounds was allocated, to be spent over ...years solely on Colonial development. Each separate territory was called ...up a Ten-Year Development Plan showing what schemes it wished to ... much they would cost, and what proportion of the cost would be paid ...m this fund and what amount would be provided by the Colony itself ...evenue and internal loans. These schemes are of many kinds—new roads, ...mproved railways, improved medical services—but all are designed to ...les of Colonial territories to use and to enjoy their own countries better ...Other some of the schemes are directly concerned with food production, ...are indirectly so. In our present complicated civilization both agriculture ...ust work together. Thus, more efficient mining will produce more steel ...oughs; a larger chemical industry will produce more fertilizers; improved ...ining will help to run food processing factories to increase exports. ... education will enable ...e made of agricultural ... research; improved ...ditions will enable the ...bourer to venture a fair ...ork. Above all, better ...ad is the first requisite ...p's work to be done, ...ich is impossible with-

...So we come back to ...that our Colonies must ...food. These develop- ...are not intended to ...ve make a profit, but ...limitations. This takes ...will be fully ten years ...the benefits of this Act

...Overseas Resources ...Act set up two Corpor- ...Colonial Development ...and the Overseas Food ...The Colonial Develop- ...ent started with a Gov- ...of 110 million pounds ...plied to finance under-

How the African is learning to improve the quality and output of his country's products scientifically. In the laboratory of this Nigerian palm oil mill, local workers test the oil and kernels daily under white supervision.

takings which were expected in the long run to pay for themselves and even to make a profit. The Corporation operates very like a large commercial company, except that the working capital is provided by the Government and the profits will not be paid to shareholders but used to finance additional projects. Also, unlike most commercial companies, it does not engage in only one type of work or in any one country.

By the end of 1950, the Colonial Development Corporation had in hand forty six different undertakings in which it had invested more than £28,000,000 capital. Some of these undertakings related to the development of timber resources, coal and other mineral deposits, hydro-electric power; many of them had to do with increasing food production. Sea fisheries and agricultural projects were, for instance, organized in Nigeria; arable farming and lake fisheries were assisted in Nyasaland, cocoa and bananas were planted in British Honduras; cool stores and packing stations were built to help the citrus fruit industry in Jamaica and Dominica; production of salt was undertaken in the Turks and Caicos Islands; sea fisheries were developed from Gibraltar; and in the Falkland Islands meat freezing apparatus was installed so that export of mutton could be added to that of wool and leather from the many sheep that graze there. A cattle ranch, and an abattoir and freezing plant, were established in Bechuanaland, the avowed purpose of which was to set up a production and marketing organization to supply the immediate meat requirements of the peoples of African territories.

The Colonial Development Corporation concentrates on mechanized farming and the scientific raising of livestock, establishes subsidiary industries to provide the necessary fertilizers and feeding stuffs, and develops derivative industries to manufacture the raw food products—producing, for example, condensed milk, tinned meat, or fruit juice extracts. It feels its way carefully, sometimes undertaking the organization and management of a scheme through government authorities only, sometimes working with local private enterprises. It has losses, such as that incurred on the over-optimistically planned poultry scheme in The Gambia which had to be drastically modified in scope, but it is only fair that these should be considered in relation to the widespread nature of the Corporation's activities as a whole.

The Queensland-British Food Corporation

The Overseas Food Corporation, whose East African groundnuts scheme is described on page 59, had more success with another ambitious scheme carried out in Queensland, Australia, in co-operation with the Queensland government, for the growing of sorghum, or millet, on a large scale for use in fattening pigs, both locally and in Britain. The Queensland-British Food Corporation has control of 700,000 acres of open country of which Peak Downs, some 200 miles inland from Rockhampton, is the centre. The soil is good, but the rainfall is poor and not very reliable. In the first year, 1949, the Corporation planted and harvested 29,300 acres. Frosts at harvest time damaged the crop, but 6,000 tons of millet reached Britain. In 1950, a harvest was reaped from 66,000 acres, and 24,000 tons of millet were sent to Britain. More thousands of tons went to the Corporation's two piggeries at Bajool, some 20 miles from Rockhampton, and Moura, 100 miles from Rockhampton. On the land still under grass, the Corporation fattened thousands of beef cattle. All the workers in these projects are white Australians; they numbered about 400 in 1950 and some of them earned more than £14 a week.

Such experiments are supplemented by increased research all round on agricultural problems. This is necessary in three principal directions—to combat disease, to find the best manner of handling each plant or animal, and to discover the lines along which

In Uganda, research has been carried out on the major cattle diseases for many years. Here stock is being inoculated to control rinderpest.

Training is given to agricultural instructors at several colonial centres. Students examine a termite nest at the Imperial College of Tropical Agriculture, Trinidad (above). A poultry-keeping class at Njala College, Sierra Leone (below).

Testing insecticidal fog ... means of checking the ... Tsetse fly by trains ... Africa. Five flies are pla... gauze cage (top left), wh... then attached to a tra... right) which steams ... through the fog screen ... An 88 per cent. fly kill ra...

the swarms in ... source before they ... grate to spread a... the Congo and ... Africa, is coordi... from an interna... centre at Abere... Northern Rhod... Belgium, the Uni... South Africa, Sou... Rhodesia and the ... African Colonies all share in this work which is for the benefit of all of them.

But international co-operation has been extended beyond the destruction of ... In Africa, France, Belgium, Portugal, Egypt and Ethiopia are all vitally concerned ... problems that equally affect Empire territories. In some cases, such as to check the s... of disease, only joint action by all at once can be of real value. Rinderpe... destructive and highly infectious disease of cattle which can be spread by the move... not only of domestic cattle but of wild game, has in the past caused untold lo... conference of all the countries mentioned above, together with the Anglo-Eg... Sudan, Southern Rhodesia, the Union of South Africa and the various British Co... administrations, was held in Nairobi in 1948. It decided on common me... to be put into effect by all to eradicate, or at least control this disease b... mass immunization of cattle by inoculation, and by preventing movement from ... infected territory to another. Other international conferences have been he... nutrition in Africa, on soils, on plant diseases and on the Tsetse fly responsible f... devastating *trypanosomiasis* (sleeping sickness in man, *nagana* in cattle).

This international co-operation has taken another interesting form in the ... Indies where there has been established a joint body, the Caribbean Comm...

Work of the Caribbean Commission

ring the United Kingdom, France, the Netherlands and the United States, to and to investigate matters of common interest to their West Indian possessions. mission from time to time valuable reports on agricultural subjects. A consultative body, the South Pacific Commission, does parallel work in that rance, Great Britain, the Netherlands, Australia, New Zealand and the United work together here. Such ready co-operation in Colonial affairs between nations od development, and since problems of climate, vegetation, diseases of plants imals, and the general productivity of the soil are common to all the islands in ne group, whatever flag they may fly, the pooling of their joint experience and mon practice of remedial measures should mark a great advance for all.

In agricultural development the Dominions also are playing their part; each has programme of research, in part in conjunction with their universities, and in part nstitutes, like the Tea Research Institute of Ceylon, which specialize on crops of lar local importance.

E whole world is short of food, even if no dislocation of production and transport occurred. International wars, civil wars as in China, increase scarcity. Countries Commonwealth and Empire that were outside the battlegrounds of the war of 5 were spurred on to expand their food production more rapidly than before; ner parts, particularly Malaya, suffered a severe check. Four Dominions contribute to the staple foods of the world: Canada, Australia, New Zealand and the Union th Africa. At the same time the population of the world is rising. In the ten years 1950, the people of India and Pakistan increased by 47½ million, of the Colonial re by 10 million, and of Britain by 2½ million. Production per head of population widely: in the United Kingdom it is £164 per person annually; in Jamaica £58; Gold Coast £7, and in Nigeria only £4.

It is clear why, after the war, great efforts were made to increase the yield of lture, especially in Africa. Three urgent problems everywhere are to combat osion, so that ground is not lost as fast as it is gained; to eradicate pests of man ast, such as the Tsetse fly; and to improve the yield of staple grain crops, particularly veloping strains that will grow well in drier and hotter climates. The first great to raise nutritional standards where these are low; and an international body d to assist this aim is the Consultative Committee for Economic Aid for South-sia. Founded in Colombo, Ceylon, in January 1950, as a Commonwealth organiza-n was later joined by the United States and by other S.E. Asian countries. It with food, credits and long-term plans of co-operation to improve the living ion of the poorest peoples of a crowded area—both inside and outside the onwealth.

pite of the vigour with which many plans of development are being pursued, battle of the world's food supply will be a hard and a long one. It is being fought hundred fronts at once, and all too often gains in one direction are offset by losses here. It is wrong to regard it as a battle of Man against Nature; if it is to be won, be by Man with Nature as an ally. We do not yet fully understand our ally, and ore we learn how to co-operate with her the greater will be our success. As in co-operation between allies is on two levels—the generals and the peasants. On the front, governments, agricultural departments and scientists are the generals. The es are the peasants—whether they be European, Indian, African, Chinese or any —who are closest to Nature. In the end it will be these who will determine the issue.

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